From:	[redacted]
To:	Manston Airport
Cc:	Richard Price
Subject:	Manston - Urgent submission
Date:	20 June 2019 12:34:42
Attachments:	SHP Comments on Appendix ISH6-21.pdf
Importance:	High

Dear Case Team,

On the basis the ExA is preparing to issue its Fourth Written Questions tomorrow, we would appreciate if the ExA would accept and consider this interim submission, which comments on Appendix ISH6-21 of the Applicant's Written Summary of Oral Representation put to ISH 6. This sought to respond to the ExA's request under Action 21.

As explained in the attached submission, the Applicant's response provides a wholly misleading perspective of the levels at which Noise Insulation provisions are set – SHP has provided verifiable evidence to demonstrate this.

The note suggests that - as a result of the Applicant's failures to furnish the examination with accurate, up to date and relevant information – it may assist the examination if a Fourth Written Question was directed at the Applicant along the following lines;

1. ***"Provide a detailed summary, with supporting evidence, of UK airports that use trigger levels for Noise Insulation provision that are below 63dB LAeq (or similar measure).***

2. ***Provide a detailed summary, with supporting evidence, of UK airports that are proposing to reduce trigger levels for Noise Insulation provision to a level that is below 63dB LAeq (or similar measure). For the avoidance of doubt, this should include airports that are consulting on proposed developments (e.g. Heathrow), or where planning applications have been submitted, or where planning approvals have been granted (e.g. London Stansted)."***

We would be grateful if you could confirm safe receipt.

Please note that I will send the Annex that forms part of Appendix B in a follow up email (due to size constraints).

Best regards
Jamie

Jamie Macnamara
Stone Hill Park Limited

SHP Comments on Appendix ISH6-21 of the Applicant's Written Summary of Oral Representation put to ISH 6

Background

1. This submission by Wood, on behalf of the Applicant, responded to a request from the ExA to provide details of those airports that have used 60dB as the trigger for their Noise Insulation provision.
2. There are two material issues with the information provided by the Applicant;
   2.1. Firstly, the information provided by the Applicant in Table 2.1 is materially inaccurate in places;
   2.2. Secondly, it fails to acknowledge the move to reduce these trigger levels further as a key mitigation measure as part of plans to extend/develop airports. In view of the Government's approach, as set out in the 2050 Green Paper, the Applicant's proposals must be compared against those that are currently being consulted upon (e.g. Heathrow) and those for which planning consent has recently been granted (e.g. London Stansted).
3. As a consequence, the document provides a wholly misleading perspective of the levels at which Noise Insulation provisions are set.
4. The Applicant is yet again failing to disclose factual information that would undermine its case.
5. Whilst SHP has only had a very short time since the information was published to review and check the Applicant's assertions, the Table below highlights a number of material inaccuracies / issues with the information submitted by the Applicant.

Airport	Commentary on Noise Insulation Scheme
Bristol Airport	The Applicant has asserted that the Noise Insulation trigger level for Bristol is 63dB LAeq. This is wrong. It is difficult to comprehend how Wood were not aware of this having prepared the Environmental Statement that accompanies Bristol Airport's December 2018 planning application to enable a throughput to 12 million passengers (planning reference: 18/P/5118/OUT). Paragraphs 7.8.7 – 7.8.8 of Chapter 7 of the ES accompanying the application (copy appended as **Appendix A**) notes the following; *"7.8.7: Air noise is currently limited by a condition which states that the area enclosed by the 57 dB LAeq,16h (07:00 to 23:00) summer noise contour shall not exceed 12.42km2 using the standardised average mode (Planning condition 30).*

Airport	Commentary on Noise Insulation Scheme
	"7.8.8: ***Residential properties located within this 57 dB LAeq,16h contour (which did not previously qualify for noise insulation in the A38 Diversion Scheme) are eligible for a grant under the noise insulation grant scheme (Planning condition 31).*** *This grant scheme is on the same basis as the previous A38 Diversion Scheme and is described in more detail in paragraph 7.8.25.* Paragraphs 7.8.25 – 7.8.26 of Chapter 7 of the ES accompanying the application, provides information on the Noise insulation grants (please also note the extension announced by the airport below); *"7.8.25 As part of the Bristol Airport Environmental Improvement Fund, grants are available from Bristol Airport to cover some or all of the costs of new glazing and ventilators for properties most closely overflown and impacted by noise from Bristol Airport flights. Depending on location a property could be eligible for a grant of 100% (up to a maximum of £5,000) or 50% (up to a maximum of £2,500).* *7.8.26 Eligible properties are within the 63 dB, 60 dB and 57 dB noise contours. If a property is within the 63 dB contour, the grant can cover 100% of new double glazed windows or ventilators up to a sum of £5,000. If a property is within the 60 dB and 57 dB contours, the grant can cover 50% of new double-glazed windows or ventilators up to a sum of £2,500.* *7.8.27 As there is a limit of annual funding grant applications are prioritised according to categories based on the contour the property is in, and whether it has had a grant before. Should the fund be oversubscribed in any one category, priority is given to those living closest to the extended centreline of the runway i.e. those closest to overflying aircraft."* It is noted that the Wood's ES, explains in paragraph 7.1.1 (see below) that it itself did not prepare the Noise Chapter, however, this raises further questions regarding the experience of Wood in undertaking such work. *7.1.1 This chapter of the Environmental Statement (ES) has been prepared by Bickerdike Allen Partners LLP and assesses the likely significant effects of the Proposed Development with reference to noise and vibration.* It should be noted that scheme has been further enhanced as evidenced by a press release from Bristol Airport dated 12 February 2019 (https://www.bristolairport.co.uk/about-us/news-and-media/news-and-media-centre/2019/2/noise-insulation-scheme), which states;

Airport	Commentary on Noise Insulation Scheme
	"Under the new proposals, grants will cover 100 per cent of costs up to £7,500 (in the 63dB LAeq 16hr contour) and £3,750 (in the 60dB and 57db contours). This is intended to encourage take up to ensure as many eligible properties as possible benefit from noise insulation."
London Gatwick	In Table 2.1, the trigger level given for Gatwick is 63dB. This is wrong. We would refer the ExA to page 65 of the Adopted 2019 Noise Action Plan, an extract of which is given below; ***"SECTION 15 – DETAILS OF CURRENT NOISE ASSISTANCE SCHEMES*** ***NOISE INSULATION SCHEME*** *The current Noise insulation Scheme was launched in 2014. This scheme was expanded significantly from the previous version covering 1,000 more properties in areas across Surrey, West Sussex and Kent.* *The major changes to the scheme are two-fold. First the noise boundary for the scheme has increased by using a lower level of noise from 66 Leq to 60 Leq as a baseline with the boundary line drawn flexibly to ensure entire roads and communities are included. Secondly, the noise contour boundary has been drawn along the flight paths by 15km to both the east and west of the airport."* A copy of the adopted 2019 Noise Action Plan is appended along with the relevant Annex as **Appendix B**. It is of note that the Noise Insulation Scheme boundary shown in Figure 29 of the Annex (Annex 7 – page 17), extends over a considerably longer distance than either the 57dB or 60dB contours shown in Figure 4 (Annex 7 – page 41).
London Stansted	In Table 2.1 of the Wood note, the noise trigger level is given as 63dB LAeq. This is misleading as explained in paragraph 2.18 of SHP's Written Summary of Oral Representations put at ISH6. This explained that the insulation scheme has been extended to 57dB contour as noted below;

Airport	Commentary on Noise Insulation Scheme
	*"Stansted Airport planning application UTT/18/0460/FUL, which Uttlesford District Council resolved to grant in November 2018, includes a requirement to extend the sound insulation grant scheme to include households in the **57 dB LAeq,16h noise contour**. Appended as Appendix 3 are (i) the draft s106 agreement (see schedule 3: Part 1) that secures this, and other obligations; (ii) a graphic from London Stansted Airport setting out the proposed scheme and the relevant noise contours and (iii) the Uttlesford DC planning committee report dated 30 November 2018."*
London Heathrow	Heathrow launched its statutory consultation for its proposed DCO on 18 June 2019. Included within the consultation documents was a Draft Noise Insulation Policy. Paragraph 3.2.1 notes; *"3.2.1 The Noise Insulation Schemes are designed to ensure a suitable internal acoustic amenity for habitable rooms as summarised in the table below."* The relevant tables providing details of the schemes and the trigger levels for each are Table 3.1 and Table 4.1, respectively. For example, these Tables show that all those in the full single mode easterly and westerly 60dB LAeq,16hr noise contour of an expanded airport would be entitled to Scheme 1 compensation as noted below; *"This includes a full package of noise insulation to habitable rooms, including bedrooms, living rooms, and dining rooms. This may include kitchens, toilets, bathrooms, but does not including porches, conservatories, out buildings and rooms solely for leisure activities.* *Windows may be upgraded to acoustic double glazing or by the addition of secondary glazing or both. External doors to habitable rooms may be upgraded. Ceilings or lofts may be over-boarded with additional lining. Acoustic thermal insulation batts (or equivalent) may be installed above ceilings in lofts. Suitable ventilation may be provided so that windows can be kept closed in warm weather."* The policy also explains that those in full single mode easterly and westerly **57dB $L_{Aeq,16hr}$ or the full 55dB L_{den}** noise contours of an expanded airport, (whichever is the bigger) would be entitled to financial support. A copy of the draft Noise Insulation Policy is attached as **Appendix C.**

Airport	Commentary on Noise Insulation Scheme
	The ExA will note that the matrix of protections proposed for residents surrounding Heathrow are far more extensive than the Applicant has proposed for residents of Ramsgate (and other parts of Thanet). SHP would also note that the ExA's proposal to reduce the trigger level to 60dB would still leave residents in a less favourable position. The information provided by the Applicant is inaccurate and understates the extent of the Noise Insulation Scheme proposed for Heathrow.

Suggested Action

6. As a result of the Applicant's failures to furnish the examination with accurate, up to date and relevant information, it is considered that it may be appropriate to direct a Fourth Written Question at the Applicant along the following lines;

   - *"Provide a detailed summary, with supporting evidence, of UK airports that use trigger levels for Noise Insulation provision that are below 63dB LAeq (or similar measure).*

   - *Provide a detailed summary, with supporting evidence, of UK airports that are proposing to reduce trigger levels for Noise Insulation provision to a level that is below 63dB LAeq (or similar measure). For the avoidance of doubt, this should include airports that are consulting on proposed developments (e.g. Heathrow), or where planning applications have been submitted or where planning approvals have been granted (e.g. London Stansted)."*

Conclusion

7. SHP consider it is totally unacceptable that the Applicant continues to submit erroneous information in an attempt to support its untenable position on this issue. It is highly concerning that the information provided in the Wood addendum fails to even take into account its own ES on Bristol Airport (as noted above).

8. SHP consider that it should not be for interested or affected parties to be forced to incur unnecessary and wasted expense in providing evidence to the Examination that rebuts unsubstantiated assertions by the Applicant. As demonstrated through this submission, the correct information is accessible,

provided a reasonable effort is undertaken to find it. Accordingly, the Applicant's submissions/assertions on this and other matters in its application cannot be accepted at face value.

9. There also remains the uncertainty over both the accuracy of the noise contours submitted by the Applicant and the fleet mix assessed by the Applicant.

10. The noise contours prepared by Wood (previously Amec Foster Wheeler) are contradicted by those submitted by Five10Twelve Ltd and No Night Flights, both of whom used the independent ERCD to prepare the contours. Wood's experience in this area is unknown, and as highlighted above, the preparation of the Noise Chapter in the Bristol Airport application was undertaken by a specialist company, and not Wood.

11. In SHP's Written Summary of Oral Representations put at the each of the dDCO and ISH6 hearings, SHP explained that the Applicant has assessed an erroneous fleet mix (dominated by small ATR-72), and as a consequence, the noise contours will not reflect the likely significant effects (if the forecast ATMs were achieved).

12. On a final matter, SHP would note that the level and accessibility of information on noise and its impacts provided by the Applicant is wholly unsatisfactory when compared to the information contained within the planning /consultation documents for schemes at Bristol, Heathrow and Stansted.

© Wood Environment & Infrastructure Solutions UK Limited

7. Noise and Vibration

7.1 Introduction

7.1.1 This chapter of the Environmental Statement (ES) has been prepared by Bickerdike Allen Partners LLP and assesses the likely significant effects of the Proposed Development with reference to noise and vibration. The chapter should be read in conjunction with **Chapter 2: Description of the Proposed Development**. The chapter considers the noise and vibration associated with the following activities at Bristol Airport:

- Flights into and out of Bristol Airport (air noise and vibration);
- Aircraft operations at Bristol Airport (ground noise);
- Bristol Airport related road traffic movements (road traffic noise); and
- Construction of the infrastructure associated with the Proposed Development (construction noise and vibration).

7.1.2 The operational noise and vibration is assessed for 2017 and for future years, both with and without the Proposed Development.

7.1.3 This chapter commences by describing the noise related planning context against which the Proposed Development will be considered. It goes on to present and discuss the baseline noise environment at Bristol Airport and then considers the likely significant effects of changes to air, ground, road traffic and construction noise and vibration in both the 'with' and 'without the Proposed Development' scenarios. Within these sections the assessment criteria and methodology are presented, the baseline noise conditions discussed where relevant, and assessments are made of any effects (beneficial and adverse) associated with the Proposed Development. Mitigation measures are also described, where appropriate, as are cumulative and residual effects.

7.1.4 The assessment of noise and vibration involves a significant amount of technical detailed work and to seek to maintain this chapter as concise and informative as possible, this chapter is supplemented by a series of appendices which provide further detail on each of the specific topics. These are referenced throughout this chapter to aid an understanding of the topic being described. The appendices supporting this noise chapter are as follows:

- **Appendix 7A** – Glossary;
- **Appendix 7B** – Relevant legislation, policy, technical guidelines and assessment criteria;
- **Appendix 7C** – Baseline Noise and Vibration;
- **Appendix 7D** – Air Noise and Vibration;
- **Appendix 7E** – Ground Noise;
- **Appendix 7F** – Road Traffic Noise; and
- **Appendix 7G** – Construction Noise and Vibration.

Noise indices

7.1.5 The $L_{Aeq,T}$ index is the average noise exposure level that occurs over a time period T. In the case of aircraft noise therefore, it accounts for the sound energy produced both by the number of aircraft

events and the noisiness of each aircraft event, over a defined time period. It is the primary metric for quantifying community effects of aircraft noise in the UK, specifically $L_{Aeq,16h}$ covering the daytime period from 07:00 to 23:00 and $L_{Aeq,8h}$ covering the night-time period from 23:00 to 07:00. The convention is to assess aircraft movements over three summer months, specifically a 92 day period from 16 June to 15 September inclusive. Summer in this chapter refers to this 92-day period unless stated otherwise.

7.1.6 The L_{den} is a unit that considers an average annual day of aircraft traffic (although it can be applied equally to either rail or road traffic) over a 24-hour period, providing greater emphasis, by way of adding noise penalties of 5 dB and 10 dB to noise levels arising from aircraft traffic in the evening (19:00 to 23:00) and night (23:00 to 07:00) periods respectively. For many airports, the L_{den} equates approximately to the $L_{Aeq,16h}$ index by the relationship $L_{den} = L_{Aeq,16h} + 2$ dB. The precise relationship however depends on the distribution of aircraft traffic over the 24-hour period.

7.1.7 The L_{night} equates approximately to the $L_{Aeq,8h}$ index commonly used to rate night noise in the UK with the exception that it is based on an average annual night of aircraft movements rather than an average summer night.

7.1.8 The L_{A90} is a unit that is often used to describe the background noise level at a location. It is defined as the noise level that is exceeded for 90% of the time.

7.1.9 Similarly, the L_{A10} is the noise level that is exceeded for 10% of the time. In the UK, the convention for assessing road traffic noise is in terms of $L_{A10,18h}$, This is the L_{A10} for the 18-hour period between 06:00 and midnight.

7.1.10 The Government, as set out in the Aviation Policy Framework (APF) [1] and supported by SoNA [2], confirms that the current convention in the UK is to assess the effect of daytime aircraft noise in terms of daytime $L_{Aeq,16h}$ noise contours determined from an average summer day of aircraft movements. As a result, emphasis on the assessment of daytime noise in this chapter is placed on the UK methodology and $L_{Aeq,16h}$ unit. This unit has been used historically within the UK over the past 30 years to assess the effects of aircraft noise.

7.1.11 For night-time, the recent publication of the Government's response[3] to the airspace change consultation[4] confirms the use of $L_{Aeq,8h}$ noise exposure contours determined from an average summer night of aircraft movements for assessing aircraft noise effects at night. These contours are also now prepared and published annually for the designated airports such as Heathrow, Stansted and Gatwick, along with daytime $L_{Aeq,16h}$ contours. The L_{night} index is also referenced, alongside the $L_{Aeq,8h}$ index, as both are very similar.

7.1.12 In Europe, noise indicators based on the L_{Aeq} unit, known as the L_{den} and L_{night}, are used to assess environmental noise effects and are used in the UK to prepare Strategic Noise Maps and Noise Action Plans. Noise contours, in terms of L_{den} and L_{night}, are therefore produced on a five-yearly basis for all major airports, including Bristol Airport. The development of criteria by which to judge this European index is in its relative infancy compared to the body of knowledge built around the $L_{Aeq,16h}$ unit, although guidance is continuing to emerge, particularly regarding noise exposure and potential health effects.

[1] Department for Transport (2013). Aviation Policy Framework.
[2] Civil Aviation Authority (2017). Survey of noise attitudes 2014: Aircraft, CAP 1506.
[3] Department for Transport (2017). Consultation Response on UK Airspace Policy: A framework for balanced decisions on the design and use of airspace. [Online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/653801/consultation-response-on-uk-airspace-policy-web-version.pdf [Checked 7/09/2018].
[4] Department for Transport (2017). UK Airspace Policy: A framework for balanced decisions on the design and use of airspace. [Online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/588186/uk-airspace-policy-a-framework-for-balanced-decisions-on-the-design-and-use-of-airspace-web-version.pdf

7.1.13 While average exposure noise contours of this type are well established and important at demonstrating trends in total noise around an airport, it is recognised in the APF that people do not always experience aircraft noise in an averaged manner and that the L_{Aeq} indicator does not necessarily reflect all aspects of the perception of aircraft noise. Supplementary indices are therefore considered as part of this air noise assessment which reflect how aircraft noise may be experienced in different localities. The purpose of this is to ensure a better understanding of noise effects and to inform the development of targeted noise mitigation measures.

7.1.14 Night-time aircraft noise can be evaluated in a number of different ways. The common method is to rate night noise in terms of noise exposure, using the $L_{Aeq,8h}$ index and the L_{night} index (for the period 23:00 to 07:00). It is also important however to consider the typical noise levels of individual aircraft, using noise indices such as the Single Event Level (SEL) and/or the L_{ASmax}.

7.1.15 The SEL is a measure of the noise energy produced during a noise event, such as an aircraft passby, averaged over a reference time of a single second. It therefore accounts for both the level and duration of the noise event. This is commonly used in the UK to describe noise produced by single aircraft (and rail) events, particularly at night.

7.1.16 The L_{ASmax} in contrast reflects what a person hears as the maximum noise level during an aircraft passby and is an index that is most understandable to people without the need for technical understanding. Like the SEL, it is used to rate the noise of an individual event, particularly at night.

7.1.17 L_{Amax} is commonly expressed in either "fast" or "slow" time weighting, denoted L_{AFmax} and L_{ASmax} respectively. For aircraft noise, the convention is to use L_{ASmax} whereas for other noise sources, L_{AFmax} is used.

7.1.18 The N index is becoming more commonly used to describe aircraft noise, often using the N70 parameter for daytime and N60 parameter for night-time aircraft noise assessment. This index describes the number of times in a defined period, such as the daytime or night-time, that a receptor will experience a given maximum noise level as a result of an aircraft passby. For example, an N70 of 20 means that a receptor will experience 20 aircraft events producing 70 dB L_{ASmax} or more during the defined period of time. This allows an understanding of how, for a given noise level and above, the number of flights during the daytime might alter when comparing two scenarios, such as with or without an airport development. There are no specific criteria for rating the acceptability of N70 or N60 contours although they further assist a comparison of two different operational scenarios.

7.1.19 Noise annoyance ratings are also a useful way of explaining how a given noise environment is likely to affect the local community, by identifying those likely to be 'highly annoyed' by aircraft noise. The measure considers the general population and it is accepted that some people would be more annoyed or less annoyed for a given daytime noise exposure level. This method of assessment offers some advantages over simply banding a population into "low", "moderate" and "high" annoyance categories since it recognises that even at relatively low levels of aircraft noise, some people can by highly annoyed. It can therefore be usefully used as a means of evaluating differences between scenarios. Similar ratings for sleep disturbance also exist for night-time activities.

7.1.20 While noise exposure contours take account of both the noisiness of aircraft events and the number of operations that occur during a day or night, they only provide an 'average' value. While this is required by Government for planning purposes, it does not reflect the change that occurs over a day. It is therefore also relevant to consider how the noise level might vary at a given receptor in a given day, particularly when comparing two scenarios. This is often represented by considering the following:

- Single mode contours produced assuming either 100% westerly operations or 100% easterly operations. There are no specific criteria available to rate noise levels associated with single mode contours. However, such contours show the noise exposure levels expected for a given day when operations occur from a single runway direction; and
- The variation in noise level at representative locations over a typical day, for example, on an hourly basis.

7.1.21 Consideration is given to both these methods within this noise chapter and accompanying appendices.

7.1.22 In undertaking an assessment for an ES, it is necessary to establish those effects that are considered to be adversely or beneficially significant. The thresholds to be adopted for this purpose are discussed later in the Assessment Criteria (**Section 7.3**) and Significance Criteria (**Section 7.9**) sections of this chapter.

Aircraft movements and scenarios

7.1.23 Three key scenarios have been considered in this chapter:

- Baseline (taken to be 2017);
- 10 million passengers per annum (mppa) Without Proposed Development in 2026. For air noise, a scenario of 10 mppa in 2021 has also been assessed since this is when this passenger capacity is expected to be reached; and
- 12 mppa With Proposed Development in 2026.

7.1.24 If the Proposed Development does not proceed, Bristol Airport would be constrained from 2021 onwards to a limit of 10 mppa. This would constrain Bristol Airport to operating no more aircraft movements in 2026 than occurred in 2021.

7.1.25 To reflect this, a sensitivity scenario for air noise has been included for 10 mppa in 2026 (Without Proposed Development) assuming that fleet modernisation occurs at the same rate as for growth to 12 mppa in 2026. In practice, the likelihood that more modern, quieter aircraft will be allocated to Bristol Airport will be reduced compared to the 12 mppa scenario since no potential for growth will be present for the airlines. Airlines are already securing flights to destinations and associated 'slots' at airports as far ahead as summer 2020 at the time of writing. If an airline can be assured growth at another airport it may seek to deliver a competitive advantage to secure capacity now. As airports are coming under increased pressure to reduce noise impacts, securing more modern aircraft fleets coupled with growth is a key way in which this can occur sustainably. Therefore, the 10 mppa 2026 scenario is a worst-case comparison for the 12 mppa scenario as the expectation of aircraft modernisation is similar.

7.1.26 As a result, in the case of air noise, the noise effects in the 10 mppa in 2021 scenario are likely to reflect the noisiest that will arise at Bristol Airport if it is constrained to 10 mppa. Moving forward in time would not alter the amount of aircraft movements or passenger throughput without additional development but noise levels would be likely to reduce as a result of gradual on-going fleet replacement with more modern and quieter aircraft.

7.1.27 The number of summer aircraft movements associated with each of the key scenarios for the daytime and night-time periods is given in **Table 7.1**, alongside the total number of annual movements.

Table 7.1 Annual aircraft movements for assessment scenarios

Scenario		Number of Aircraft Movements		
		92-day Summer Daytime (07:00-23:00)	92-day Summer Night-time (23:00-07:00)[1]	Annual Total
Key scenarios	**Baseline 2017**	18,924	2,735	73,562
	10 mppa 2021 (Without Proposed Development)	19,294	4,022	86,973
	12 mppa 2026 (With Proposed Development)	22,540	4,639	97,393
Air noise sensitivity scenario	**10 mppa 2026 (Without Proposed Development)**	19,294	4,022	86,973

Note: 1. This period is different to that which has a movement limit restriction, which is based on 23:30 to 06:00.

7.1.28 During the period 23:30 to 06:00, Bristol Airport is currently restricted to 3,000 aircraft movements in the summer season (approximately seven months, defined as the period from late March to late October when British Summer Time is in effect) and 1,000 aircraft movements in the winter season (when Greenwich Mean Time is in effect). The 12 mppa application seeks to keep the annual limit of 4,000 but remove the segregation of summer and winter periods. In this chapter, the assessment of the 12 mppa scenario is on the basis that this change is approved. Therefore the comparisons to the without development scenarios offer a worst case comparison.

7.1.29 The 12 mppa application does not seek any change to the Quota Count (QC) budgets for the summer and winter seasons. Such periods are also based on the same time criterion as the number of aircraft movements as explained above. The QC budgets are to remain at 1,260 in the summer and 900 in the winter.

7.2 Limitations of this assessment

7.2.1 Air noise and ground noise assessments in the future have been based on forecast aircraft movement data, while assessments for 2017 have been based on actual data. The forecasts used in this assessment have been prepared by Bristol Airport Limited (BAL) and verified by Mott McDonald, independent aviation consultants.

7.2.2 The road traffic noise assessment has been based on traffic counts undertaken in 2018 to determine current conditions as 2017 information is not available. It has been assumed that conditions in 2017 were identical. The baseline year has been referred to as 2017 throughout this chapter for consistency with other noise sources.

7.2.3 The assessment of construction noise is based on detailed construction plant schedules and programmes of works provided by BAL, supplemented with additional plant where relevant based on professional judgement.

7.3 Relevant legislation, planning policy and technical guidance

Legislative context

7.3.1 The following legislation is relevant to the assessment of the effects on noise and vibration receptors:

- *EU Regulation 598-2014*[5] sets out, for airports where a noise problem has been identified, the process to be followed for the introduction of noise-related operating restrictions in a consistent manner on an airport-by-airport basis, so as to help improve the noise climate and to limit or reduce the number of people significantly affected by potentially harmful effects of aircraft noise, in accordance with the Balanced Approach[6];
- *Environmental Noise Directive (END) 2002/49/EC 2002*[7] aims to define a common approach across the European Union with the intention of avoiding, preventing or reducing on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise including from aviation;
- *The Control of Pollution Act 1974*[8] provides a means for regulating construction noise and vibration;
- *The Aeroplane Noise Regulations 1999*[9] require that all civil propeller and jet aeroplanes registered in the UK shall have a noise certificate;
- *Aerodrome (Noise Restrictions) (Rules and Procedures) Regulations 2003*[10] apply to larger civil airports in the EU. Where it is proposed to introduce noise-related operating restrictions, the competent authority (currently BAL itself) is required to undertake a detailed assessment of the noise situation in the locality, and the full range of possible measures to address any noise problems identified. An EIA can be used under this legislation for introducing any noise-related changes that occur as a result of infrastructure or significant airport operational changes;
- *The Civil Aviation Act 2006*[11] includes a number of measures aimed at strengthening the powers available to control noise. These included provisions for airport operators to fix charges in respect of an aircraft or a class of aircraft based on the noise or amount of emissions produced by the aircraft. The Act also gave airport operators statutory powers to introduce noise control schemes for the purpose of avoiding, limiting or mitigating the effect of noise connected with the taking off or landing of aircraft;

[5] European Commission (2014). Regulation (EU) No 598/2014 of the European Parliament and of the Council of 16 April 2014 on the establishment of rules and procedures with regard to the introduction of noise-related operating restrictions at Union airports within a Balanced Approach and repealing Directive 2002/30/EC, [online]. Available at: https://publications.europa.eu/en/publication-detail/-/publication/b6947ca7-f1f6-11e3-8cd4-01aa75ed71a1/language-en [Checked 21/08/2018].

[6] 'Balanced Approach' as defined in EU Regulation 598-2014 is the process developed by the International Civil Aviation Organization under which the range of available measures, namely the reduction of aircraft noise at source, land-use planning and management, noise abatement operational procedures and operating restrictions, is considered in a consistent way with a view to addressing the noise problem in the most cost-effective way on an airport-by-airport basis;

[7] European Commission (2002). Directive 2002/49/EC Directive Of The European Parliament and of the Council of 25th June 2002 relating to the assessment and management of environmental noise, [online]. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32002L0049&from=EN [Checked 21/08/2018].

[8] Control of Pollution Act (1974), c.40. [Online]. Available at: http://www.legislation.gov.uk/ukpga/1974/40/pdfs/ukpga_19740040_en.pdf [Checked 21/08/2018].

[9] The Aeroplane Noise Regulations (1999). No. 1452. [online]. Available at: http://www.legislation.gov.uk/uksi/1999/1452/contents/made [Checked 30/08/2018].

[10] The Aerodromes (Noise Restrictions) (Rules and Procedures) Regulations (2003) SI 1986/925. [Online]. Available at: http://www.legislation.gov.uk/uksi/2003/1742/made [Checked 25/09/2018].

[11] Civil Aviation Act (2006), c34. [online]. https://www.legislation.gov.uk/ukpga/2006/34/contents [Checked 30/08/2018].

- *The Civil Aviation Act 2012*[12] placed a new duty on the Civil Aviation Authority (CAA) to make information about the environmental performance of the aviation sector and measures taken to limit adverse environmental effects available to the general public, and;
- *Environmental Noise (England) Regulations 2006 (as amended)*[13] transpose the *European Environmental Noise Directive (Directive 2002/49/EC)*[2] into English law. They require operators of non-designated major civil airports, such as Bristol Airport, to make and submit strategic noise maps to the Secretary of State every five years starting in 2007 which reflect the noise situation in the preceding calendar year. Regulation 18 places a duty on the operators of major airports, as the competent authority, to draw up a Noise Action Plan for places near the airport and submit this to the Secretary of State. There is then a continuing obligation on airport operators to review (and revise, if necessary) the Noise Action Plan every five years or sooner where a major development occurs.
- *The Town and Country Planning (Environmental Impact Assessment) Regulations 2017*[14] set out the process of Environmental Impact Assessments to be carried out in England, in accordance with corresponding European *Directive 2014/52/EU*[15].

7.3.2 Further details of how this legislation relates to noise and vibration is given in **Appendix 7B**.

Planning policy context

7.3.3 There are several policies and guidance at the national and local level that will be relevant to the noise assessment contained in this ES. In addition to policy referenced in **Chapter 5: Legislative and Policy Overview**, policy directly applicable to this noise assessment is listed in **Table 7.2** below.

Table 7.2 Relevant policies and their implications for noise and vibration

Policy reference	Implications
Noise Policy Statement for England (NPSE) 2010[16]	
Paragraph 1.7	Provides the framework for noise management decisions to be made that ensure noise levels do not place an unacceptable burden on society.
Paragraph 2.20	Introduces the concepts of NOEL (No Observed Effect Level), LOAEL (Lowest Observed Adverse Effect Level) and SOAEL (Significant Observed Adverse Effect Level).
National Planning Policy Framework (NPPF) 2018[17]	
Paragraph 180	States that planners should seek to mitigate and minimise potential adverse noise impacts from a new development.

[12] Civil Aviation Act (2012), c19. [Online]. http://www.legislation.gov.uk/ukpga/2012/19/contents/enacted [Checked 30/08/2018].
[13] The Environmental Noise (England) Regulations (2006). No. 2238. [Online]. http://www.legislation.gov.uk/uksi/2006/2238/contents/made [Checked 30/08/2018].
[14] The Town and Country Planning (Environmental Impact Assessment) Regulations 2017. [Online]. Available at: http://www.legislation.gov.uk/uksi/2017/571/pdfs/uksi_20170571_en.pdf [Checked 23/11/2018].
[15] European Commission (2014). Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment. [Online]. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0052&from=EN [Checked 23/11/2018].
[16] Defra (2010). Noise Policy Statement for England, [Online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69533/pb13750-noise-policy.pdf [Checked 10/04/2018].
[17] Ministry of Housing, Communities and Local Government (2018). National Planning Policy Framework, [Online]. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf [Checked 08/10/2018].

Policy reference	Implications
Aviation Policy Framework (APF) 2013[1]	
Paragraph 3.12	Defines the Government's objectives and policies on the impacts of aviation in the UK and states that the Government's overall objective on noise is to "Limit and where possible reduce the number of people in the UK significantly affected by aircraft noise".
Paragraph 3.13	Guidance provided on the noise metric used to rate airborne noise (summer $L_{Aeq,16h}$ and $L_{Aeq,8h}$).
Paragraph 3.17	Interpretation given of the 57 dB $L_{Aeq,16h}$ contour as an average level of summer daytime aircraft noise marking the approximate onset of significant community annoyance.
Paragraph 3.36 to 3.38	Government expectations and guidance with respect to noise levels where airport operators are to provide exposed households assistance with the cost of moving and acoustic insulation.
Paragraph 3.39 to 3.41	Government expectations and guidance where households are exposed to increased noise levels due to new developments.
UK Airspace Policy: A framework for balanced decisions on the design and use of airspace 2017 consultation[3]	
Paragraph 9	States that although the Government's current aviation policy is set out in the APF[1], the policies set out within this document provide an update to some of the policies on aviation noise contained within the APF, and should be viewed as the current government policy.
Paragraph 2.39	Removal of the 3 dB minimum change requirement for financial assistance towards acoustic insulation to residential properties in the 63 dB $L_{Aeq,16h}$ level or above.
Paragraph 2.70	A level of 54 dB $L_{Aeq,16h}$ is acknowledged to correspond to the onset of significant community annoyance and replaces the 57 dB $L_{Aeq,16h}$ level in the APF.
Paragraph 2.72	For assessing and comparing noise impacts of airspace changes, LOAEL is taken as 51 dB $L_{Aeq,16h}$ and 45 dB L_{night}, for daytime and night-time noise respectively. 45 dB $L_{Aeq,8h}$ is considered appropriate as the LOAEL for airspace change assessment.
Airports National Policy Statement (NPS)[18]	
Section 2	Sets out the Government's policy on the need for new airport capacity in the South East of England

Technical guidance

7.3.4 A summary of the technical guidance used to assess the likely significant effects of the Proposed Development with respect to noise and vibration is given in **Table 7.3**. Details of technical guidance are given in **Appendix 7B.**

Table 7.3 Technical guidance relevant to noise and vibration

Technical guidance	Relevance to this assessment
General	
WHO *Guidelines for Community Noise*[19]	Sets out noise targets which represent goals for minimising the adverse effects of noise on health.

[18] Department for Transport (2018). Airports National Policy Statement: new runway capacity and infrastructure at airports in the South East of England. [Online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/714106/airports-nps-new-runway-capacity-and-infrastructure-at-airports-in-the-south-east-of-england-web-version.pdf [Checked 30/08/2018].

[19] Berglund, B. et al (1999). Guidelines for community noise. [Online]. Available at: http://apps.who.int/iris/bitstream/handle/10665/66217/a68672.pdf?sequence=1&isAllowed=y [Checked: 30/08/2018].

Technical guidance	Relevance to this assessment
WHO *Night Noise Guidelines*[20]	Effects on health and sleep from transportation sources.
WHO Environmental Noise Guidelines for the European Region: A Systematic Review on Environmental Noise and Effects on Sleep [21]	Reports the latest findings from the WHO concerning night noise from transportation sources and its effects on health and sleep.
BS8233:2014 *Sound insulation and noise reduction for buildings – Code of practice*[22]	Provides guidance on the control of external noise. The standard presents a number of design ranges for indoor noise levels for different types of space.
Department of Education *BB93*[23]	Gives upper limits for indoor ambient noise level for new and refurbished schools, and schools formed by a material change of use.
Department of Health *HTM 08-1*[24]	Guidance on recommended internal noise levels for healthcare facilities.
Air noise	
IEMA *Guidelines on Environmental Noise Impact Assessment*[25]	Significance rating for a change in air noise level.
Civil Aviation Authority *Survey of Noise Attitudes 2014*[26]	Methods to determine noise annoyance.
Report of a Field Study of Aircraft Noise and Sleep Disturbance[27]	Eligibility threshold for a sound insulation scheme due to night time aircraft noise.
Environmental Noise: Valuing impacts on: sleep disturbance, annoyance, hypertension, productivity and quiet[28]	Percentage of those people likely to be highly sleep disturbed.
Airborne aircraft vibration	

[20] World Health Organisation Europe (2009). Night Noise Guidelines for Europe, [Online]. Available at: http://www.euro.who.int/__data/assets/pdf_file/0017/43316/E92845.pdf [Checked 7/09/ 2018].
[21] Basner, M. et al. (2018). WHO Environmental Noise Guidelines for the European Region: A Systematic Review on Environmental Noise and Effects on Sleep. Int. J. Environ. Res. Public Health 2018, 15, 519. [Online]. Available at: https://www.mdpi.com/1660-4601/15/3/519 [Checked 25/09/2018].
[22] British Standards Institution (2014). BS 8233:2014 Sound insulation and noise reduction for buildings – Code of practice. [Online]. Available at: https://shop.bsigroup.com/ProductDetail/?pid=000000000302415798_ga=2.85437209.1462736480.1535108011-979344642.1535108011 [Checked: 24 /08/2018].
[23] Department of Education (2015). Acoustic design of schools: performance standards Building bulletin 93, [Online]. Available at: https://www.gov.uk/government/publications/bb93-acoustic-design-of-schools-performance-standards [Checked 24/08/2018].
[24] Department of Health (2013). Specialist Services, Health Technical Memorandum 08-01: Acoustics, [Online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/144248/HTM_08-01.pdf [Checked 24/08/2018].
[25] Institute of Environmental Management and Assessment (2014). Guidelines on Environmental Noise Impact Assessment. London: IEMA.
[26] Civil Aviation Authority (2017). Survey of noise attitudes 2014: Aircraft, CAP 1506, [Online]. Available at: https://publicapps.caa.co.uk/docs/33/CAP%201506%20FEB17.pdf [Checked 30/08/2018].
[27] Ollerhead, J.B. et al (1992). Report of a Field Study of Aircraft Noise and Sleep Disturbance: A Study Commissioned by the Civil Aviation Policy Directorate of the Department of Transport from the Department of Safety, Environment and Engineering, Civil Aviation Authority. London: HMSO.
[28] Department for Environment Food and Rural Affairs (2014). Environmental Noise: Valuing impacts on: sleep disturbance, annoyance, hypertension, productivity and quiet. [Online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/380852/environmental-noise-valuing-imapcts-PB14227.pdf [Checked 26/09/2018].

Technical guidance	Relevance to this assessment
Aviation Noise Metric – Research on the Potential Noise Impacts on the Historic Environment by Proposals for Airport Expansion in England[29]	Summarises research into vibration effects from aircraft.
Airports and the Environment[30]	Description of potential vortex damage to buildings due to aircraft.
Ground noise	
National Noise Incidence Study[31]	Percentage of population exposed to noise levels which exceed the guideline for 'serious' community annoyance.
Road traffic noise	
Design Manual for Roads and Bridges[32]	Road traffic noise assessment criteria.
Construction noise and vibration	
BS 5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites. Noise*[33]	Provides methods to predict, measure and assess the impact of construction and demolition noise.
BS 5228-2:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites. Vibration*[34]	Recommends basic methods to control vibration on construction and open sites with significant vibration levels arising from work activities/operations.

7.4 Data gathering methodology

Study area

7.4.1 The study area is based on the largest extent of likely effects due to noise. This area is different for different noise and vibration sources considered.

7.4.2 The largest ZoI considered for the assessment is for air noise. This zone consists of a rectangle that extends 20km to the east, 25km to the west, 4km to the north and 4km to the south of the Bristol Airport runway and is shown in **Figure 7.7**.

7.4.3 The only properties likely to potentially experience significant levels of vibration from airborne aircraft are those closest to aircraft in flight, which are the dwellings bordering Felton Common.

7.4.4 For ground noise the ZoI considered consists of a 6km square centred on the Bristol Airport runway.

[29] Historic England (2014). Aviation Noise Metric – Research on the Potential Noise Impacts on the Historic Environment by Proposals for Airport Expansion in England, [Online]. Available at: https://research.historicengland.org.uk/Report.aspx?i=15740 [Checked 26/11/2018]
[30] Anne Paylor (1994). Airports and the Environment.
[31] BRE (2002). The National Noise Incidence Study 2000/2001 (United Kingdom): Volume 1 – Noise Levels, Client report number 206344f, [Online]. Available at: http://randd.defra.gov.uk/Document.aspx?Document=10280_NIS1206344f.pdf [Checked 7/09/2018].
[32] Highways England (2018). Design Manual for Roads and Bridges, [Online]. Available at: http://www.standardsforhighways.co.uk/ha/standards/dmrb/index.htm [Checked 24/04/ 2018].
[33] British Standards Institution (2008). BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites. Noise, [Online]. Available at: https://shop.bsigroup.com/ProductDetail?pid=000000000030258086 [Checked 24/08/2018].
[34] British Standards Institution (2008). BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites. Vibration, [Online]. Available at: https://shop.bsigroup.com/ProductDetail/?pid=000000000030258089 [Checked 2/10/2018].

7.4.5 For road traffic noise the ZoI considered consists of a rectangle that extends approximately 1km to the east, 2km to the west, 1km to the north and 2km to the south of the Bristol Airport runway. The receptors considered are shown in **Figure 7F.2**.

7.4.6 For construction noise and vibration, the ZoI considered consists of the immediate vicinity of the construction sites. The receptors considered are shown in **Figure 7.2**.

Desk study

7.4.7 An initial desk top study has been undertaken to review the existing airport including Google Earth™ imagery and Ordnance Survey (OS) mapping of the surrounding environment to determine the context of the proposal. The desk top study identified the main scope of the noise surveys undertaken to assess the existing environment and the location of the closest noise sensitive receptors to the proposed operations for the impact assessment. Dwelling data and data regarding noise sensitive community buildings has been acquired from the sources listed below. A summary of the organisations that have supplied data, together with the dates the data was supplied and the nature of that data is as follows:

- National Air Traffic Services – June 2018:
  - Geographical information about the location and height of the runway have been taken from the latest version of the UK Aeronautical Information Package (AIP) for Bristol Airport.
- OS – May 2018:
  - Local topography based on the OS Landform Panorama Digital Terrain Model (DTM) product processed for use in the air noise modelling software;
  - 1:50,000 base map; and
  - AddressBase Plus product to identify non-residential property types.
- BAL – May to October 2018:
  - Current and future aircraft types and movement information, arrival and departure flight tracks;
  - Current (2017) and forecast (2026) road traffic numbers; and
  - Construction noise information.
- CACI Ltd – October 2017:
  - Dwelling counts and populations.

Survey work

7.4.8 The noise climate around Bristol Airport includes noise from aircraft activity, as well as non-aircraft related activities. The baseline at any given location will depend on its proximity to Bristol Airport and aircraft flight paths as well as to major or minor roads and any other local noise sources. The A38 in particular is a major contributor to the baseline noise environment close to Bristol Airport, with the M5 and A370 also contributing significantly to the noise environment to the west of Bristol Airport. Some noise is also produced by traffic on minor roads, for example Downside Road, alongside departing and arriving aircraft at Bristol Airport and aircraft activity on the ground.

7.4.9 Noise monitoring locations have been selected to obtain representative ambient and background noise levels at those noise sensitive receptor locations close to Bristol Airport, that is, at receptors most at risk of being affected by aircraft operations from the development of Bristol Airport.

7.4.10 Details of the noise survey work is given in **Appendix 7C** and a summary is presented in this section.

Long-term noise monitoring

7.4.11 Day and night-time noise surveys were undertaken at four locations around Bristol Airport to establish the baseline noise environment. The locations are representative of the communities in closest proximity to Bristol Airport, which therefore are likely to experience the greatest noise effect from Bristol Airport operations.

7.4.12 The surveys were carried out during the period 13 March 2018 to 5 April 2018, where each survey lasted at least three weeks. Each noise survey comprised unattended, free-field and continuous monitoring of 5-minute periods. Observations were made at each monitoring location of the noise climate prevailing at the time that measurements were started.

7.4.13 Noise levels have been measured in terms of $L_{Aeq,T}$, which represents the average noise level, and L_{AF90}, which represents the background noise level, for the 16 hour day (07:00 to 23:00), 12 hour day (07:00 to 19:00) and 8 hour night (23:00 – 07:00) periods.

7.4.14 Details of the long-term noise monitoring locations are given in **Table 7.4** and are shown in **Figure 7C.1**.

Table 7.4 Long-term noise monitoring locations

Receptor	Location	Dates of noise survey
A	Cooks Bridle Path, Downside	14 March 2018 to 4 April 2018
B	Downside Road, Lulsgate Bottom	13 March 2018 to 5 April 2018
C	School Lane, Lulsgate Bottom	13 March 2018 to 3 April 2018
D	Red Hill (A38), Redhill	14 March 2018 to 5 April 2018

Ground noise monitoring

7.4.15 A daytime attended noise survey was undertaken at Bristol Airport on 26 July 2018 to measure the ground noise of taxiing arriving and departing aircraft.

7.4.16 Measurements were free-field, of 10 second duration and recorded in terms of $L_{Aeq,T}$, SEL and L_{AFmax}, with observations made of the aircraft type at each time.

7.4.17 The ground noise monitoring location was at the corner of Winters Lane to the north of the runway and is shown in **Figure 7C.2**.

Road traffic noise monitoring

7.4.18 A daytime attended noise survey was undertaken at Bristol Airport on 26 July 2018 to measure road traffic noise at four locations around Bristol Airport. The locations are representative of the communities in closest proximity to the roads affected by Bristol Airport, which therefore are likely to experience the greatest change in road traffic noise from Bristol Airport operations.

7.4.19 The principles of the Department of Transport's *Calculation of Road Traffic Noise*[35] (*CRTN*) shortened measurement method were used, with three measurements of 5-minute duration taken

[35] Department of Transport (1988). Calculation of Road Traffic Noise. Department of Transport Welsh Office. London: HMSO.

in three consecutive hours at each location. Values of $L_{A10,T}$ were obtained at each location, along with other environmental noise indices including $L_{Aeq,T}$, $L_{A90,T}$ and L_{AFmax}.

7.4.20 Details of the road traffic noise monitoring locations are given in **Table 7.5** and are shown in **Figure 7C.2**.

Table 7.5 Road traffic noise monitoring locations

Receptor	Location
R1	Downside Road
R2	A38 / Downside Road intersection
R3	A38 / North Side Road roundabout
R4	A38 / road to Old Barn Lane intersection

7.5 Overall baseline

Noise

7.5.1 The locations at which the baseline noise conditions have been assessed are shown in **Figure 7C.1** and **Figure 7C.2.** The results are summarised in **Table 7.6**, **Table 7.7** and **Table 7.8** for these locations in terms of the ambient noise level (L_{Aeq}), maximum noise level (L_{AFmax}) and background noise level (L_{A90}). Detailed results are given in **Appendix 7C.**

7.5.2 As well as airborne and ground-borne noise from Bristol Airport, the surrounding community is affected by noise from the local road network.

7.5.3 All noise sources affect the L_{Aeq} metric which, commonly used to denote the ambient noise level, signifies the single steady average noise exposure level which is equivalent in energy terms to that produced by the various fluctuating noise levels that occur in the given measurement period. The L_{AFmax} metric is the peak noise level recorded during the measurement period. The L_{A90} metric denotes the level of noise which is exceeded for 90% of the time and represents the prevailing background noise level in the absence of any noise from airborne aircraft.

Table 7.6 Current baseline noise measurements – long -term summary

Location	16-hour day (07:00 to 23:00)		8-hour night (23:00 to 07:00)		Dominant daytime noise source
	L_{Aeq} dB(A)	Average $L_{AF90,5m}$ dB(A)	L_{Aeq} dB(A)	Average $L_{AF90,5m}$ dB(A)	
A Cooks Bridle Path, Downside	53	38	49	37	Aircraft
B Downside Road, Lulsgate Bottom	58	49	54	47	Aircraft
C School Lane, Lulsgate Bottom	59	47	54	42	Aircraft
D Red Hill (A38), Redhill	50	42	47	37	Road traffic

Table 7.7 Current baseline noise measurements – ground noise summary

Location	Average $L_{Aeq,10s}$ dB(A)	Average SEL dB(A)	Average L_{AFmax} dB(A)	Dominant noise source
G1 Winter's Lane (corner N of Runway)	82	92	84	Aircraft taxiing

Table 7.8 Current baseline noise measurements – road traffic noise summary

Location	$L_{Aeq,15m}$ dB(A)	L_{A10} dB(A)	L_{A90} dB(A)	L_{AFmax} dB(A)	Dominant noise source
R1 Downside Road	69	71 – 73	42 – 47	87 – 92	Road traffic
R2 A38 / Downside Road intersection	75	78 – 79	63 – 65	86 – 89	Road traffic
R3 A38 / North Side Road roundabout	69	69 – 71	59 – 60	82 – 89	Road traffic
R4 A38 / road to Old Barn Lane intersection	72	75 – 77	47 – 52	83 – 86	Road traffic

7.5.4 **Table 7.6** indicates that the general ambient noise level around Bristol Airport is in the range of 50 to 59 dB L_{Aeq} during the daytime, with an underlying background noise level in the range 38 to 49 dB L_{A90}. During the night, ambient noise levels are lower and lie in the range 47 to 54 dB L_{Aeq}, with an underlying background noise level in the range 37 to 47 dB L_{A90}.

7.5.5 The noise environment at any given location in the immediate vicinity of Bristol Airport depends on its proximity to Bristol Airport and the A38. The A38 generates a consistent and steady noise around the area and is a contributor to the background noise level. Superimposed on this are departing and arriving aircraft at Bristol Airport, along with noise from aircraft activity on the ground.

Vibration

7.5.6 The baseline vibration conditions for most dwellings in the vicinity of Bristol Airport are generally dictated by local road traffic conditions. For dwellings along major roads, there is potential for perceptible vibration levels to be produced by passing heavy vehicles such as buses and Heavy Goods Vehicles (HGVs). For dwellings located away from busy roads, vibration levels will be low and the occupants are unlikely to be aware of any vibration within their premises from outside sources.

7.5.7 Dwellings that are situated close to Bristol Airport and are in line with the runway have the potential to experience perceptible vibration due to airborne aircraft. Some dwellings bordering Felton Common to the east of the runway fall into this category.

7.6 Consultation

7.6.1 North Somerset Council (NSC) have been consulted regarding the methodology of the assessment. BAL met with NSC on 11 October and 23 October 2018. **Table 7.9** provides a summary of the points raised by NSC and the responses given.

© Wood Environment & Infrastructure Solutions UK Limited

Table 7.9 Summary of issues raised during consultation regarding noise and vibration

Issue raised	Consultee(s)	Response and how considered in this chapter	Section Ref
NSC highlighted that while the scoping report referred to most relevant policies at both a local and national level, some were missing	NSC	Additional local and national policies referred to in final ES chapter.	**Section 7.3, Appendix 7B**
NSC noted that BAL 'do not intend to increase the number of 'night-time' flights per annum, which is limited to 4,000, but they do wish to include greater flexibility to their distribution, which is restricted to 3,000 in the summer time and 1,000 in the winter time. If this leads to a higher concentration of night-time flights in the summer season, which is when more residents may choose to sleep with windows open, the potential impacts on sleep disturbance and human health should be examined.'	NSC	The assessment of 12 mppa has assumed that the 3,000-summer restriction is lifted (but 4,000 annual remains). The comparisons to 12 mppa are therefore worst-case comparisons as the combined effect of both the increase in movements and relaxation of summer restriction is assessed.	**Section 7.10 and Section 7.11**
NSC requested a simplified version of the ES chapter on noise be prepared that can be used to engage with local communities	NSC	A summary version of the ES chapter on noise will be prepared following issue of the ES that can be used to engage with local communities. Bristol Airport has prepared a fact sheet for this purpose.	**n/a**
NSC wish to understand changes in aircraft fleet and modernisation between the 10 mppa and 12 mppa scenarios particularly with respect to past aircraft type adoption	NSC	Changes in aircraft fleet and modernisation between the 10 mppa and 12 mppa scenarios particularly with respect to past aircraft type adoption are given explicitly in **Appendix 7D**.	**Appendix 7D**
NSC requested an explanation for Significant Observed Adverse Effect Level (SOAEL) is provided	NSC	Request was based on summary report (Summary Findings of ES Air Noise Assessment 10.10.18) provided to NSC which did not include a definition of SOAEL. SOAEL is defined in this chapter and associated appendices.	**Section 7.9, Appendix 7B**
NSC raised a concern about noise due to car parking activities (such as doors slamming)	NSC	Assessment of noise due to car parking activities is included in **Appendix 7F**.	**Appendix 7F**

Issue raised	Consultee(s)	Response and how considered in this chapter	Section Ref
at unwelcome hours due to increased car parking capacity			
NSC requested that changes in road traffic noise levels at Defra-defined Noise Important Areas are presented	NSC	Changes in noise level at Noise Important Areas have been included in **Appendix 7F**.	**Appendix 7F**

7.7 Scope of the assessment

Assessment activities

Air noise and vibration

7.7.1 Air noise contours have been prepared in terms of the usual UK noise indicator for daytime airborne noise, the $L_{Aeq,16h}$ index, and for night-time airborne noise, the $L_{Aeq,8h}$ index, using the *Federal Aviation Administration (FAA) Aviation Environmental Design Tool (AEDT)*[36].

7.7.2 Consideration has been given to other sources of aircraft performance data, such as those available from the Civil Aviation Authority (CAA) on the performance of future aircraft types, as well as aircraft performance information relating to operations of relevant aircraft types. In this assessment, this has included the Airbus A320neo and A321neo, and also the Boeing B738MAX aircraft.

7.7.3 The likelihood of vibration effects due to airborne aircraft have been assessed for the dwellings bordering Felton Common.

Ground noise

7.7.4 A ground noise assessment has been undertaken for the area around Bristol Airport where aircraft ground operations, such as engine running on stands and at hold positions, taxiing, manoeuvring and the operation of auxiliary power units (APUs) while on stands, will give rise to the greatest potential noise effects.

7.7.5 Ground noise contours have been prepared in terms of the daytime $L_{Aeq,16h}$ index and the night-time $L_{Aeq,8h}$ index using Datakustik CadnaA[37] noise modelling software.

7.7.6 Consideration has been given to survey work of aircraft ground operations, both at Bristol Airport and at other airports where similar aircraft types operate.

Road traffic noise

7.7.7 Road traffic noise calculations at representative noise sensitive receptors have been undertaken using the UK recognised method of assessment set out in CRTN[35].

7.7.8 Road traffic noise contours have been prepared in terms of the $L_{A10,18h}$ index using Datakustik CadnaA[37] noise modelling software.

Construction noise and vibration

7.7.9 The construction plant noise emission details as set out in tables within BS 5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites*[33] (BS 5228-1) along with the associated described methodologies have been used to assess and predict construction noise for different phases of the Proposed Development at key noise sensitive receptors.

7.7.10 For the vibration assessment, information from BS 5228-2:2009+A1:2014[34] (BS 5228-2) has been used where relevant to predict vibration levels at key noise and vibration sensitive receptors.

[36] Federal Aviation Administration (2017). Aviation Environmental Design Tool (AEDT) Version 2d, [Online]. Available at: https://aedt.faa.gov/2d_information.aspx [Checked 28/08/2018].
[37] DataKustik GmbH (2018). CadnaA - State-of-the-art Noise Prediction Software 2017 Version, [Online]. Available at: https://www.datakustik.com/en/products/cadnaa/ [Checked 1/10/2018].

Spatial scope

7.7.11 The spatial scope of the assessment application site together with the Zones of Influence (ZoI) that have formed the basis of the study area is described in **Section 7.4**.

7.7.12 The largest ZoI considered for the assessment is for air noise. This zone consists of a rectangle that extends 20km to the east, 25km to the west, 4km to the north and 4km to the south of the Bristol Airport runway and is shown in **Figure 7.7**.

Temporal scope

7.7.13 The temporal scope of the assessment is consistent with the period over which the Proposed Development would be carried out and therefore covers the construction (2019-2026) and operational periods (2017, 2021 and 2026). The air, ground and road traffic noise assessments consider the following scenarios:

- Baseline year (2017);
- 10 mppa in 2021 (air noise only). This aircraft mix and number of movements corresponds to Bristol Airport reaching its current passenger limit;
- 12 mppa. This aircraft mix and number of movements corresponds to implementation of the Proposed Development in 2026; and
- 10 mppa in 2026. This aircraft mix and number of movements corresponds to the 10 mppa in 2021 scenario but assumes that aircraft modernisation occurs at the same rate as under the 12 mppa scenario. For the air noise assessment this is regarded as a sensitivity case as there is significant uncertainty regarding how much additional aircraft modernisation would occur beyond 2021 in the event that the Proposed Development is not implemented (refer to paragraph 7.1.25). For ground and road traffic noise aircraft modernisation does not affect the assessment.

Potential receptors

7.7.14 Potential noise receptors considered include dwellings as well as non-residential receptors, as follows:

- Residential receptors;
- Schools;
- Hospitals or residential healthcare facilities;
- Places of worship, and;
- Amenity areas.

Residential receptors

7.7.15 For the purposes of dwelling and population counts for air noise, the residential receptors have been identified using a 2017 dataset supplied by CACI Ltd. This data consists of dwelling count and population by postcode. CACI derive this data from the latest available census information and adjust it to account for developments that have been built out since the latest census.

7.7.16 For the purposes of dwelling counts for ground noise, the residential receptors have been identified using the OS AddressBase Plus product, which provides details of individual dwellings.

7.7.17 For the purposes of dwelling counts for road traffic noise, representative residential receptors have been identified from details of the location and layout of buildings around Bristol Airport supplied by BAL, and from the inspection of maps of the area.

7.7.18 Specific residential receptors used for the air noise assessment are given in **Table 7.10**. Similarly, **Table 7.11** gives the specific residential receptors used for the ground noise and construction noise assessments. These are shown in **Figure 7.1** and **Figure 7.2**. These receptors have been chosen as representative of the local communities most sensitive to noise effects from the Proposed Development.

Table 7.10 Specific residential receptors – air noise

Number	Air noise residential receptor
1	Henley Park, Yatton
2	Bishops Road, Cleeve
3	Fountain Treeworks, Brockley
4	Cooks Bridle Path, Downside
5	Downside Road, Downside
6	School Lane, Lulsgate Bottom
7	Hillview Gardens, Felton
8	Market Place, Winford
9	Chew Magna, North Wick
10	Church Road, Norton Malreward
11	Lye Mead, Winford
12	Red Hill, Redhill
13	Wrington Hill, Wrington
14	Southlands Way, Congresbury

Table 7.11 Specific residential receptors – general

Designator	Ground and construction residential receptor
A	Cooks Bridle Path, Downside
B	Downside Road (West), Lulsgate Bottom
C	School Lane, Lulsgate Bottom
D	Red Hill (A38) (North), Redhill
E	Winters Lane (South), Redhill
F	Downside Road (South), Downside
G	Downside Road (North), Downside

Designator	Ground and construction residential receptor
H	Downside Road (East), Lulsgate Bottom
I	Bridgwater Road (A38), Lulsgate Bottom
J	Red Hill (A38) (South), Redhill
K	Winters Lane (North), Redhill

Non-residential receptors

7.7.19 Specific non-residential receptors used for the air noise and ground noise assessments are given in **Table 7.12**, **Table 7.13** and **Table 7.14** for schools, places of worship and amenity areas respectively. These are shown in **Figure 7.3**, **Figure 7.4**, and **Figure 7.5** respectively. No hospitals or residential healthcare facilities were identified within the study area.

Table 7.12 Specific non-residential receptors – schools

Designator	Non-residential receptor - school
S1	Winford Primary, Winford
S2	St. Andrew's Primary, Congresbury
S3	Yatton Junior, Yatton
S4	Marksbury Primary, Marksbury
S5	St. Anne's Primary, Hewish
S6	Chew Magna Primary, Chew Magna
S7	Wrington Primary, Wrington
S8	Court de Wyck Primary, Cleeve
S9	Pensford Primary, Pensford
S10	Dundry Primary, Dundry
S11	Stanton Drew Primary, Stanton Drew
S12	Woodspring School, Weston-Super-Mare

Table 7.13 Specific non-residential receptors – places of worship

Designator	Non-residential receptor place of worship
W1	St. Thomas A Becket's Church, Pensford
W2	Marksbury Methodist Church, Marksbury
W3	St. Barnabas Church, Claverham
W4	St. Dunstan And St Anthony Church, Claverham
W5	Chew Magna Baptist Church, Chew Magna

Designator	Non-residential receptor place of worship
W6	Sacred Heart Church, Chew Magna
W7	All Saints Church, Publow
W8	St. James Church, Regil
W9	Holy Trinity Church, Cleeve
W10	St. Margaret's Church, Queen Charlton
W11	St. Mary and St Peters Church, Winford
W12	St. Mary's Church, Compton Dando
W13	Congresbury Methodist Church, Congresbury
W14	Chewton Keynsham Church, Chewton Keynsham
W15	Dundry Baptist Church, Dundry
W16	St. Nicholas Church, Brockley
W17	St. Andrews Church of England, Hartcliffe
W18	Wrington United Reformed Church, Wrington
W19	Holy Saviour's Church, Hewish
W20	Yatton Methodist Church, Yatton
W21	St. Andrews Church, Congresbury
W22	Holy Trinity Church, Norton Malreward
W23	St. Katherine's Church, Felton
W24	All Saints Church, Wrington
W25	All Saints Church, Kingston Seymour
W26	Claverham Free Church, Claverham
W27	The Church of Saint Mary The Virgin, Yatton
W28	Christ Church, Redhill
W29	St. Michael, Dundry
W30	Gospel Hall - Pensford Gospel Church, Pensford
W31	St. Michael's Church, Burnett
W32	St. Mary's Church, Stanton Drew
W33	St. Andrew's Church, Chew Magna
W34	Winford Baptist Chapel, Winford
W35	Horsecastle Chapel, Yatton

Table 7.14 Specific non-residential receptors – amenity areas

Designator	Non-residential receptor amenity area
A1	The Glebe Field, Wrington
A2	Yatton Village Green, Yatton
A3	Glebelands Gardens, Yatton
A4	Bishport Avenue Open Space, Hartcliffe
A5	Streamcross Playing Field, Claverham
A6	Crosscombe Walk Open Space, Hartcliffe
A7	Court Farm Road Open Space, Whitchurch
A8	Cadbury Hill, Yatton
A9	Vee Lane Play Area, Felton
A10	Manor Road Playing Field, Keynsham
A11	Marksbury Playground, Marksbury
A12	Chew Magna Playing Field, Chew Magna
A13	Orchid Drive Play Area, Keynsham
A14	Publow Lane Recreation Ground, Publow
A15	The Mead Play Area, Keynsham
A16	Hamilton Way Play Area, Whitchurch
A17	Congresbury Millennium Green, Congresbury
A18	Hangstones Playing Field, Yatton
A19	Rock Road Playing Field, Yatton
A20	Land at Saxon Court, St. Georges
A21	Holmoak Road Playing Field, Keynsham
A22	Chalfield Close Play Area, Keynsham
A23	Whitchurch Playground, Whitchurch
A24	Felton Common, Felton

Likely significant effects

7.7.20 The noise and vibration receptors that have been taken forward for assessment are summarised in **Table 7.15,** along with the potential likely significant effects that might arise as a result of the Proposed Development.

Table 7.15 Noise receptors scoped in for further assessment

Receptor	Relevant assessment criteria	Likely significant effects
Air noise		
Residential	NPPF[17], NPSE[16], APF[1], SoNA201420[26], WHO[19 20 21]	People exposed to significant air noise could experience worsening conditions, or new people become similarly exposed.
Schools	BB93[23]	Communication and learning could be affected adversely by any increase in air noise.
Places of Worship	As Residential	Increased risk of disturbance to people and activities.
Amenity Areas	BS 8223[22], WHO[19]	Increased risk of disturbance to people and activities.
Airborne aircraft vibration		
Residential	Historic England[29]	Perceptible vibration e.g. windows rattling.
Ground noise		
Residential	WHO[19]	People exposed to significant ground noise could experience worsening conditions, or new people become similarly exposed.
Schools	BB93[23]	Communication and learning could be affected adversely by any increase in ground noise.
Places of Worship	n/a	Increased risk of disturbance to people and activities.
Amenity Areas	BS 8223[22], WHO[19]	Increased risk of disturbance to people and activities.
Road traffic noise		
All Receptors	*Noise Insulation Regulations*[38 39], BS 8233[22]	People exposed to significant road traffic noise could experience worsening conditions, or new people become similarly exposed.
Construction noise and vibration		
All Receptors	BS 5228[33 34]	People could become exposed to significant construction noise levels, over a relatively prolonged period.

7.8 Environmental measures embedded into the development proposals

7.8.1 A range of environmental measures have been embedded into the development proposals as outlined in **Section 2.3**. **Table 7.16** outlines how these embedded measures will influence the noise and vibration assessment. A detailed account of the embedded mitigation through existing noise controls and mitigation procedures in place at Bristol Airport is also described.

[38] The Noise Insulation Regulations (1975). No. 1736. [online]. Available at: http://www.legislation.gov.uk/uksi/1975/1763/contents/made [Checked 4/10/2018].
[39] The Noise Insulation (Amendment) Regulations (1988). No. 2000. [online]. Available at: https://www.legislation.gov.uk/uksi/1988/2000/contents/made [Checked 4/10/2018].

7.8.2 In general, these controls and procedures are in place and have therefore been accounted for in the assessment. The exception is the noise insulation grants. These grants allow homeowners to reduce the noise levels inside dwellings as they provide funds towards the cost of noise insulation works. However, as the convention for aircraft noise assessment is to assess it in terms of the external noise levels, this mitigation is not accounted for in the assessment.

Table 7.16 Summary of the embedded environmental measures

Receptor	Changes and effects	Embedded measures
Dwellings exposed to ground noise to the north of Bristol Airport	Aircraft movements will increase with potentially a consequential increase in ground noise exposure.	As part of the Proposed Development, a new walkway will be constructed to the north of the existing eastern apron. This will offer screening from ground noise for receptors to the north of this location, in particular those on Downside Road.

Bristol Airport – existing planning controls

7.8.3 Bristol Airport has operated for many years under a number of planning consents and as such is already subject to planning controls and voluntary agreements relating to those consents as well as its own sustainability and noise management policies.

7.8.4 Most recently planning permission was granted in February 2011 for expansion of Bristol Airport to handle 10 mppa[40]. The current Section 106 Agreement includes planning obligations relating to the management and control of air and ground noise through the implementation of a noise control scheme and adoption of operational procedures and practices aimed at achieving ongoing improvements.

7.8.5 These are each briefly described in the following section and are given in detail in Bristol Airport's current *Noise Action Plan*[41].

7.8.6 A planning obligation required the establishment of an Airport Environmental Improvement Fund[42], the purposes of which includes the funding of initiatives to mitigate the impact of aircraft and ground noise in the local community. Bristol Airport paid an initial sum of £100,000 into the fund in 2012 with further annual payments exceeding £100,000 and increasing in line with the annual percentage increase in passenger numbers.

Air noise

7.8.7 Air noise is currently limited by a condition which states that the area enclosed by the 57 dB $L_{Aeq,16h}$ (07:00 to 23:00) summer noise contour shall not exceed 12.42km^2 using the standardised average mode (Planning condition 30).

7.8.8 Residential properties located within this 57 dB $L_{Aeq,16h}$ contour (which did not previously qualify for noise insulation in the A38 Diversion Scheme) are eligible for a grant under the noise insulation grant scheme (Planning condition 31). This grant scheme is on the same basis as the previous A38 Diversion Scheme and is described in more detail in paragraph 7.8.25.

[40] North Somerset Council (2011). Planning permission 09/P/1020/OT2, [Online]. Available at: https://planning.n-somerset.gov.uk/online-applications/ [Checked 6/09/2018].
[41] Bristol Airport (2014). Noise Action Plan 2014 to 2018, [Online]. Available at https://www.bristolairport.co.uk/~/media/files/brs/about-us/nap-14_18.ashx?la=en [Checked 27/04/2018].
[42] Bristol Airport (2018). Airport Environmental Improvement Fund, Guidelines for applying for a grant for noise insulation, [Online]. Available at: https://www.bristolairport.co.uk/~/media/files/brs/about-us/community/guidelines-2018_final.ashx?la=en [Checked 5/10/2018].

Ground noise

7.8.9 Bristol Airport has procedures in place to limit the use of Auxiliary Power Units (APUs).

7.8.10 These include requirements for the installation and availability of Fixed Electrical Ground Power (FEGP) before the use of stands for live aircraft movements (Planning condition 32) and for FEGP to be used in preference to APUs (Planning condition 33) on areas cited in these conditions.

7.8.11 Mobile diesel ground power generators and aircraft APUs cannot be used on stands 38 and 39 (Planning condition 34). As part of the application, a variation to this condition is proposed so that it only applies between the hours of 23:00 and 06:00 as per stands 34 to 37.

7.8.12 APUs cannot be used on stands 34 to 37 between the hours of 23:00 and 06:00 (Planning condition 35).

7.8.13 Planning conditions 4, 5 and 69 require the erection of 3m to 5m high noise attenuation walls around the western and eastern apron extensions, and a timber fence around the northern boundary of the north side car park.

Night flying

7.8.14 A night noise Quota Count (QC) limit is used to restrict night flying (Planning condition 36). This assigns each aircraft operation a QC score based on how loud they are. The noise classification of an aircraft is set out in a formal notice published by NATS on a regular basis.

7.8.15 The current annual quota is 2,160 points, with 1,260 points allocated for the summer season (approximately seven months, defined as the period from late March to late October when British Summer Time is in effect) and 900 points allocated for the winter season.

7.8.16 Bristol Airport reports the use of the quota at the end of every season to the Airport Consultative Committee and publishes it on Bristol Airport's website.

7.8.17 The number of take-offs and landings between 23:30 and 06:00 are limited to 3,000 in the summer season and 1,000 in the winter season (Planning condition 38). As part of the application Bristol Airport is seeking to amend this condition to a limit of 4,000 for two adjoining seasons.

7.8.18 The total number of take-offs and landings between 06:00 and 07:00 and between 23:00 and 23:30 are limited to 10,500 in any calendar year (Planning condition 39).

Noise monitoring

7.8.19 Aircraft noise is continually measured using noise monitors located at each end of the runway, near Felton and Congresbury. These monitors are positioned in accordance with ICAO standards for monitoring noise from aircraft arriving and departing using runway 27.

7.8.20 The Felton monitor is therefore located 2,289m from the touchdown point for arriving aircraft using runway 27 and the Congresbury monitor is 6,500m from the start of roll point for departing aircraft using runway 27.

7.8.21 A further monitor is located at Littleton Hill, 6,500m from the start of roll point for departing aircraft using runway 09.

7.8.22 A portable noise monitor can be used to record noise at specific locations in response to queries from the local community. Mobile noise monitoring has occurred at over 12 sites during 2018 including Felton, Congresbury, Winford, Wrington and Cleeve at the time of writing.

7.8.23 The monitoring system, known as the Aircraft Noise Operation Management System (ANOMS) also takes radar data from air traffic control (ATC) enabling the aircraft track to be recorded and compared with the published routes.

7.8.24 Processed data from the noise monitors are published annually in Bristol Airport's *Operations Monitoring Report* [43] which provides a year by year comparison of noise results.

Noise insulation grants

7.8.25 As part of the Bristol Airport Environmental Improvement Fund, grants are available from Bristol Airport to cover some or all of the costs of new glazing and ventilators for properties most closely overflown and impacted by noise from Bristol Airport flights. Depending on location a property could be eligible for a grant of 100% (up to a maximum of £5,000) or 50% (up to a maximum of £2,500).

7.8.26 Eligible properties are within the 63 dB, 60 dB and 57 dB noise contours. If a property is within the 63 dB contour, the grant can cover 100% of new double glazed windows or ventilators up to a sum of £5,000. If a property is within the 60 dB and 57 dB contours, the grant can cover 50% of new double-glazed windows or ventilators up to a sum of £2,500.

7.8.27 As there is a limit of annual funding grant applications are prioritised according to categories based on the contour the property is in, and whether it has had a grant before. Should the fund be oversubscribed in any one category, priority is given to those living closest to the extended centreline of the runway i.e. those closest to overflying aircraft.

Bristol Airport – noise abatement procedures

7.8.28 Details of opening hours and noise abatement procedures are given in the latest version of the UK Aeronautical Information Package (AIP) for Bristol Airport[44].

7.8.29 Bristol Airport offers a continuous day and night service. Prior permission is required for take offs and landings between 23:00 and 07:00 (22:00 and 06:00 BST). A night surcharge applies to all landings between 22:00 and 07:00 (21:00 to 06:00 BST).

7.8.30 The following procedures are followed to minimise the noise impact of departing and arriving aircraft around Bristol Airport unless otherwise instructed by ATC:

- Operators of all aircraft using Bristol Airport are to ensure that their aircraft conform to the noise abatement techniques laid down for the type of aircraft and that operations are conducted in a manner calculated to cause the least disturbance practicable in areas surrounding Bristol Airport; and
- When operating Instrument Flight Rules (IFR), any aircraft carrying out a visual approach must not join the final approach track at an altitude of less than 2,200ft (QNH[45]).

[43] Bristol Airport (2017). 2017 Operations Monitoring Report, [online]. Available at https://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=2ahUKEwjb-r7GgZDdAhUEElAKHevOC5cQFjAAegQIABAC&url=https%3A%2F%2Fwww.bristolairport.co.uk%2F~%2Fmedia%2Ffiles%2Fbrs%2Fabout-us%2Fenvironment%2F2017-operations-monitoring-report.ashx%3Fla%3Den&usg=AOvVaw08RjZl1qAodXxwf_UpeuOC [Checked 28/08/2018]. (Use the airport website link please: https://www.bristolairport.co.uk/about-us/environment/sustainability

[44] National Air Traffic Services (2017). IAIP Bristol – EGGD Textual data and Charts related to the Airport, [Online]. Available at: http://www.nats-uk.ead-it.com/public/index.php%3Foption=com_content&task=blogcategory&id=36&Itemid=85.html [Checked 28/08/2018].

[45] QNH is a code indicating the atmospheric pressure adjusted to mean sea level. An altitude given in terms of QNH is the altitude above mean sea level, measured using atmospheric pressure.

7.8.31 Aircraft using the Instrument Landing System (ILS) in Instrument or Visual Meteorological Conditions (IMC or VMC) shall not descend below the altitude specified above before intercepting the glide path nor thereafter fly below it. Aircraft approaching without assistance from ILS or radar shall follow a descent path which will not result in its being at any time lower than the approach path which would be followed by an aircraft using the ILS glide path.

7.8.32 The Noise Preferential Routeings (NPR) given in **Table 7.17** are compatible with ATC requirements and shall apply in both VMC and IMC. The tracks are to be flown by all departing aircraft of more than 5,700kg maximum certified weight, unless otherwise instructed by ATC or unless deviations are required in the interests of safety.

7.8.33 The NPRs are incorporated in the ATC Standard Instrument Departure procedures (SIDs).

Table 7.17 Noise Preferential Routeings (NPRs)

Take-off runway	Details
09	Climb straight ahead to I-BON 4.7 nm DME to be no lower than 3000ft QNH at this point before commencing the turn
27	Climb straight ahead to I-BTS 4.5 nm DME to be no lower than 3000ft QNH at this point before commencing the turn.

7.8.34 The obligations of NPRs cease when an altitude of 4,000ft QNH or above has been reached.

7.8.35 Subject to ATC instructions, inbound aircraft are to maintain as high an altitude as practical and adopt a continuous descent profile, when appropriate.

7.8.36 Every aircraft using Bristol Airport shall, after take-off or 'go around' be operated in the quietest possible manner.

7.8.37 Pilots and engineers should restrict the use of Auxiliary Power Units (APU) to the minimum time necessary. Between 23:30 to 05:59 (22:30 to 04:59 BST) except when immediately prior to departure, APUs may only be run subject to approval from Airside Operations.

7.8.38 In order to avoid overflying Felton Village, when departing runway 09 and requiring to turn left, all aircraft shall climb ahead to 1nm DME before commencing the left turn.

7.8.39 Noise abatement procedures for light aircraft are given in

7.8.40 **Table** 7.18.

Table 7.18 Noise abatement procedures for light aircraft

Take-off runway	Details
09	(1) Practice engine failures after take-off by single-engine aircraft are not permitted. (2) Circuit direction is normally right hand only. However, ATC may require non-standard circuit direction for traffic integration.
27	(1) All pilots should arrange their flight so as to minimise noise nuisance. (2) Circuit direction is normally left hand.

7.9 Assessment methodology

7.9.1 The generic project-wide approach to the assessment methodology is set out in **Chapter 4**: **Approach to Preparing the Environmental Statement**, specifically in **Sections 4.5** to **4.7**. However, whilst this has informed the approach that has been used in this noise and vibration assessment, it is necessary to set out how this methodology has been applied, and adapted as appropriate, to address the specific needs of this assessment.

7.9.2 The general assessment methodology involves the following:

- Derivation of assessment criteria for each type of noise source;
- Computation of existing and future noise levels under the various scenarios;
- Assessment of magnitude of impacts (absolute) on residential and non-residential receptors, for each scenario;
- Determination of the change in noise levels, and associated impacts (relative) as a result of the introduction of the Proposed Development;
- Consideration of the likely significant effects of changes in noise levels from Without to With Proposed Development;
- Description of the potential effects (beneficial and adverse) associated with the Proposed Development; and
- Description of any mitigation measures, where appropriate, in relation to the Proposed Development and describe any residual effects.

7.9.3 While the technical assessment methodology adopted for a given source of noise is generally unique (each of which is described in the relevant section later in this chapter), there are some common concepts that apply across all noise topics based on Government guidance through the Noise Policy Statement for England (NPSE)[16].

7.9.4 The Government, through the NPSE, and the introduction of the Significant Observed Adverse Effect Level (SOAEL), has presented the concept of significance thresholds to rate health effects and quality of life. It is generally accepted that "significance" in this context differs from that used in an ES. This is because it refers to the significance of the absolute noise level, whereas an ES assesses the significance of the proposed change. For example, a receptor may be exposed to significant levels of noise regardless of any development, but if the noise level remains the same then the receptor would not be said to be significantly impacted by the development.

7.9.5 The thresholds for assessing health effects and quality of life are important, particularly when considering and comparing different scenarios as well as establishing the need for and extent of

noise mitigation. The NPSE introduces the concept of the NOEL (No Observed Adverse Effect Level), LOAEL (Lowest Observed Adverse Effect Level), and SOAEL. The National Planning Policy Guidance also introduces the concept of the UAEL (Unacceptable Adverse Effect Level). It is appropriate to consider what level of noise at Bristol Airport might be attributed to these levels, in light of emerging guidance on the effects of noise on health and also Government guidance.

7.9.6 The NOEL, LOAEL, SOAEL and UAEL can vary depending on the source, receptor, and time period (e.g. day or night), and in this way the sensitivity of the receptor is embedded into the criteria. For example, the SOAEL for a dwelling at night will be lower than during the day, to reflect the fact that dwellings are more sensitive to noise at night.

7.9.7 The technical guidance, summarised in **Table 7.3** and described in detail in **Appendix 7B**, has been used to develop noise and vibration assessment criteria and also used to derive values of LOAEL, SOAEL and UAEL as given in NPSE[16] and National Planning Practice Guidance (NPPG)[46], where appropriate. The definition of these is as follows:

- LOAEL – Lowest observed adverse effect level. This is the level above which adverse effects on health and quality of life can be detected; and
- SOAEL – Significant observed adverse effect level. This is the level above which significant adverse effects on health and quality of life occur.
- UAEL – Unacceptable adverse effect level. Noise above this level should be prevented.

7.9.8 Further guidance on how planning authorities should take account of the acoustic environment and the mitigation strategies which should be applied in relation to the above terms is provided in the NPPG[46] .

7.9.9 The advice is that noise above the SOAEL should be avoided using appropriate mitigation while taking into account the guiding principles of sustainable development.

7.9.10 Where noise is between LOAEL and SOAEL, the advice is to take all reasonable steps to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development. Noise in this category is described as an observed adverse effect which is noticeable and intrusive.

7.9.11 NPSE states that it is not possible to give a single objective noise-based measure that defines a SOAEL that is applicable to all sources of noise for all situations. It acknowledges that the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It also acknowledges that further research is required to increase understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, it states that not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available.

7.9.12 Where any adverse noise effects are predicted, these are identified and if these cannot be avoided, mitigation measures are recommended to ensure no significant residual effects on health and quality of life arise. This approach is considered consistent with the principal aims of the NPSE. It is important to note that findings against the LOAEL and SOAEL are measures of the effect of noise on health and quality of life, and not environmental impact assessment findings.

7.9.13 During the course of this assessment (October 2018), the World Health Organization (WHO) published their updated *Environmental Noise Guidelines*[47]. These guidelines strongly recommend

[46] Defra (2014). National Planning Policy Guidance, Planning Practice Guidance, Noise, [Online] Available at: https://www.gov.uk/guidance/noise--2 [Checked 21/08/2018].
[47] World Health Organization Regional Office for Europe (2018). Environmental Noise Guidelines for the European Region. [Online]. Available at: http://www.euro.who.int/__data/assets/pdf_file/0008/383921/noise-guidelines-eng.pdf [Checked: 25/10/2018].

that aircraft noise does not exceed 45 dB L_{den} or 40 dB L_{night} outside a dwelling. These recommendations are extremely stringent but can be considered in the context of the noise levels assessed and reported here as occurring now and in the future around Bristol Airport. They are aspirational targets and have not yet been adopted as policy. As a result, this assessment still relies on previous advice from the World Health Organisation as relevant to this assessment as this has informed Government policy that applies today.

7.9.14 The assessment criteria for different noise sources is given in the following sections. Full details of how this assessment criteria is developed is given in **Appendix 7B**.

Air noise and vibration assessment criteria

Air noise

7.9.15 Air noise encompasses that produced by aircraft during their departure and arrival at Bristol Airport. It is produced when an aircraft starts its departure, travels along the runway and climbs into the air as well as when an aircraft approaches Bristol Airport, touches down and slows to taxiing speed on the runway. It therefore includes reverse thrust noise when this takes place.

7.9.16 The assessment methodology for the calculation of air noise is set out in detail in **Appendix 7D**, along with the assumptions used to rate air noise and the results of the assessment.

Residential receptors – absolute levels

7.9.17 The Government, in the APF[1], acknowledges research in recent years which suggests that the balance of probability is that people are now relatively more sensitive to aircraft noise than in the past. At that time, the Government considered there was insufficient evidence to indicate a clear threshold noise level denoting the "onset of significant community annoyance". As a result, they retained within the APF the 57 dB $L_{Aeq,16h}$ contour as the average level of daytime aircraft noise marking the approximate onset of significant public annoyance.

7.9.18 In 2017, following the Government's response to the UK Airspace Change consultation, the Government set out policies that provide an update to some of the policies on aviation noise contained within the APF. They advised that these should be viewed as the current government policy. Specifically, it advised that a level of 54 dB $L_{Aeq,16h}$ is now acknowledged to correspond to the onset of significant community annoyance and replaces the 57 dB $L_{Aeq,16h}$ level in the APF.

7.9.19 The Government also advise that some adverse effects of annoyance can now be seen to occur down to 51 dB $L_{Aeq,16h}$ and that this should be used as the LOAEL when assessing and comparing noise impacts of airspace changes.

7.9.20 Based on Government guidance as described above, the following contour values are relevant in terms of assessing daytime airborne aircraft noise:

- 51 dB $L_{Aeq,16h}$ which provides a threshold below which there are no observed adverse effects from air noise. This represents the LOAEL; negligible effect;
- 54 dB $L_{Aeq,16h}$ which currently provides an indication of the onset of significant community annoyance; minor effect;
- 63 dB $L_{Aeq,16h}$ which denotes moderate levels of community annoyance, commonly used at airports and recommended by the Government as an eligibility criterion for sound insulation grant schemes. As a result, this value is commonly considered to represent the SOAEL; moderate effect; and

- 69 dB $L_{Aeq,16h}$ which denotes high levels of community annoyance where UK Government guidance is for consideration to be given by airports to assist in the costs of re-locating people from exposed dwellings, or, under certain circumstances, to offer to purchase such dwellings. This represents the UAEL; very substantial effect.

7.9.21 Night-time aircraft noise can be evaluated in a number of different ways. The common method is to rate night noise in terms of noise exposure, using the $L_{Aeq,8h}$ index (for the period 23:00 to 07:00). The $L_{Aeq,16h}$ and $L_{Aeq,8h}$ indices are the primary indicators used in this assessment, in line with those recommended by UK Government in the APF and the recent response to the air space change consultation.

7.9.22 Alongside the primary indicators, a number of supplementary indicators as recommended in the APF have been used to better describe the changes in the air noise environment between the different scenarios. These are as follows:

- L_{den}, which is an annual average 24-hour metric that penalises movements occurring in the evening (19:00 to 23:00) and night (23:00 to 07:00) periods by 5 dB and 10 dB respectively;
- L_{night}, which is an annual average 8-hour night (23:00 to 07:00) metric;
- Number of people likely to be highly annoyed;
- Number of people likely to be highly sleep disturbed;
- SEL and L_{ASmax} for the loudest typical (i.e. at least once per night) individual aircraft events in different scenarios;
- N70 (daytime) and N60 (night-time) contours, which demonstrate the areas exposed to a given number of events above the specified L_{ASmax} value;
- Single mode contours, which assume either 100% easterly or westerly operations and show the noise exposure levels expected for a given worst-case day with operations occurring in a single direction; and
- Variation in noise level at representative locations, both between scenarios and over the day.

7.9.23 These supplementary indicators have been provided for information and do not form the primary basis of the assessment of significance. They do however provide context to the significance, helping to show how the noise environment will change between one scenario and another. Further information on how these supplementary indicators can be interpreted is given in **Appendix 7B**.

7.9.24 The WHO[20] sets out night noise guidelines in terms of L_{night} which are commonly used in Europe to rate the acceptability of environmental noise at night. While the guideline value of 40 dB L_{night} is set out as an environmental goal to aspire towards, 55 dB L_{night} has been suggested as an interim target. The UK Government also recognise 45 dB L_{night} as representing the LOAEL while adopting the 45 dB $L_{Aeq,8h}$ index for this purpose for consistency with the $L_{Aeq,16h}$ daytime noise index.

7.9.25 The $L_{Aeq,8h}$ index differs only slightly from the L_{night} index in that it relates to an average summer day of aircraft activity, as opposed to an average annual day. As summer activity is generally higher than at other times of the year, the adoption of the $L_{Aeq,8h}$ unit, in place of the L_{night} unit represents a conservative approach. Similarly, on this basis, 55 dB $L_{Aeq,8h}$ is adopted as the SOAEL in this assessment.

7.9.26 It is also important however to consider the noise of individual aircraft, using noise indices such as the SEL and/or the L_{ASmax}.

7.9.27 The WHO guidelines provide advice that for a good sleep, indoor sound pressure levels should not exceed approximately 45 dB L_{Amax} more than 10-15 times per night. Accounting for sleeping with a

bedroom window slightly open (and a reduction from outside to inside of 15 dB), this translates to an outside sound pressure level of 60 dB L_{Amax}. (approx. 70 dB(A) SEL for aircraft noise).

7.9.28 In the UK, where night noise is considered sufficiently high, a value of 90 dB(A) SEL (approx. 80 dB L_{ASmax}) is commonly used as the eligibility threshold for a sound insulation scheme, often based on the noisiest or most common aircraft operation occurring once or more on average per night. This threshold was developed based on research published in 1992 by the Department of Transport[48].

7.9.29 On the basis of the above, the absolute noise values used to assess the impact magnitude of air noise at residential receptors are given in **Table 7.19**.

Table 7.19 Air noise impact assessment criteria (absolute) – residential, outdoors

Subjective description of Impact	Daytime criteria[1] $L_{Aeq,16h}$ dB	Night-time criteria[2] $L_{Aeq,8h}$ dB	L_{ASmax} dB	SEL dB(A)	Description
Negligible	51 (LOAEL)	45 (LOAEL)	60	70	More than 10-15 events per might
Very minor	54	48			
Minor	57	51			
Minor/Moderate	60	54			
Significant - Moderate	63 (SOAEL)	55 (SOAEL)	80	90	More than one event per night
Significant - Substantial	66	60			
Significant – Very Substantial	69 (UEL)	63 (UEL)	90	100	More than one event per night

Note: 1. Equivalent L_{den} criterion value, ≈ $L_{Aeq,16h}$ + 2 dB.
2. Approximately equivalent to L_{night} value.

Non-residential receptors – absolute levels

7.9.30 Absolute noise criteria for non-residential receptors are given in **Table 7.20** and their derivation is explained in **Appendix 7B**.

[48] Ollerhead, J.B. et al (1992). Report of a Field Study of Aircraft Noise and Sleep Disturbance: A Study Commissioned by the Civil Aviation Policy Directorate of the Department of Transport from the Department of Safety, Environment and Engineering, Civil Aviation Authority. London: HMSO.

Table 7.20 Air noise impact assessment criteria (absolute) – non-residential, outdoors

Receptor	External noise level threshold
Schools[23]	55 dB $L_{Aeq,30min}$ (daytime)
Places of worship[22]	As per daytime residential – see **Table 7.19**.
Amenity areas[22]	55 dB $L_{Aeq,T}$

Relative levels

7.9.31 In addition to the absolute noise level, the relative change in noise level between operational scenarios is used to assess air noise. A potential impact rating for a change in level is given in **Table 7.21**. A semantic scale of this type, based on the *Institute of Environmental Management and Assessment noise impact guidelines*[49], has been accepted in various airport Public Inquiries.

Table 7.21 Air noise impact ratings - change in noise level, outdoors

Change in noise level dB	Subjective impression	Potential Impact classification
0 to 2	Imperceptible change	Negligible
2 to 3	Barely perceptible change	Minor
3 to 6	Perceptible change	Moderate
6 to 9	Up to a halving or a doubling of loudness	Substantial
> 9	Equal to or more than a halving or doubling of loudness	Very substantial

Magnitude of effect and significance

7.9.32 The magnitude of an effect from changing from one scenario to another, such as from without to with the Proposed Development, is established from a consideration of both the absolute noise level after the change along with the magnitude of the change in noise level that occurs at a receptor.

7.9.33 The effect of a change in noise level tends to increase with the absolute level of noise experienced at a receptor. If, for example, the daytime noise level at a dwelling were to change from 45 dB to 50 dB $L_{Aeq,16h}$, (below the LOAEL) the overall effect for the occupants would be less than if the daytime noise level were to increase by the same amount from 63 dB to 68 dB $L_{Aeq,16h}$ (above the SOAEL).

7.9.34 There is no clearly accepted method of how to rate the magnitude of the effect of a change in the absolute air noise level and the associated change in noise level. Some guidance has however been provided in the NPPG[46] which states among "What factors influence whether noise could be a concern?" the following:

> *"In cases where existing noise sensitive locations already experience high noise levels, a development that is expected to cause even a small increase in the overall noise level may result in a significant adverse effect occurring even though little or no change in behaviour would be likely to occur."*

[49] Guidelines for Environmental Noise Impact Assessment, Institute of Environmental Management & Assessment, October 2014

7.9.35 **Table 7.22** shows how the primary air noise indicators are interpreted into magnitude of effect. This is based on the information presented in this chapter and professional judgement.

Table 7.22 Summary of magnitude of effect – air noise

Receptor Type	Outdoor noise level, dB	Magnitude of effect				
		Very low	Low	Medium	High	Very High
		Change in noise level, dB(A)				
Residential Day (07:00-23:00)	$51 \leq L_{Aeq,16h} < 63$	0-2	2-3	3-6	6-9	>9
	$L_{Aeq,16h} \geq 63$	0-1	1-2	2-4	4-7	>7
Residential Night (23:00-07:00)	$45 \leq L_{Aeq,8h} < 55$	0-2	2-3	3-6	6-9	>9
	$L_{Aeq,8h} \geq 55$	0-1	1-2	2-4	4-7	>7
Schools	$L_{Aeq,30min} \geq 55$	0-2	2-3	3-6	6-9	>9
Places of worship	$51 \leq L_{Aeq,16h} < 63$	0-2	2-3	3-6	6-9	>9
	$L_{Aeq,16h} \geq 63$	0-1	1-2	2-6	6-9	>9
Amenity Areas	$L_{Aeq,T} \geq 55$	0-2	2-3	3-6	6-9	>9

7.9.36 A potential significant effect (adverse or beneficial) is considered to arise if in **Table 7.22** the magnitude of the effect is rated as medium or higher. Additionally, a change in the number of dwellings exposed to 90 dB(A) or higher at least once per night is a potential significant effect. Whether a significant effect arises will depend on context, such as the number of noise sensitive receptors affected and how often it occurs.

Airborne aircraft vibration

7.9.37 Low frequency noise from airborne aircraft has the potential to cause perceptible vibration levels within dwellings. For this reason, the most appropriate noise metric to assess the likelihood of these effects is the maximum C-weighted noise level, denoted L_{Cmax}. C-weighting gives more weight to low frequency noise rather than the more commonly used A-weighting, which approximates the average human hearing response to different frequencies of noise.

7.9.38 This vibration effect is most obviously characterised by effects such as windows rattling. As discussed in the Historic England report[29], aircraft passbys that produce a maximum noise level above 97 dB L_{Cmax} are likely to produce an audible rattle of windows. While it is appreciated that low frequency noise from aircraft can induce perceptible vibration levels in lightweight structures and loose-fitting components, the levels are below those at which even minor cosmetic damage would be likely to occur.

7.9.39 Vibration effects due to airborne aircraft can vary depending on the specific details of the building, for example, the room dimensions which can cause resonance effects at certain frequencies. Resonances increase the sound level in parts of the room and decrease it in others which can influence the any consequential vibration.

7.9.40 The noise level of 97 dB L_{Cmax} has been taken as a threshold for potential significance of vibration effects due to airborne aircraft events. Whether a significant effect occurs between scenarios will depend on the number of dwellings affects and the frequency of the events.

7.9.41 The other potential effect from airborne aircraft vibration is vortex damage to buildings. This is best explained by an extract from the *Airports and the Environment*[30] report:

"Less of an environmental problem, but one that affects community relations, is that of vortex damage to properties within neighbouring communities. Vortices, which are circulating currents of air created by the passage of aircraft, are generally dispersed by wind and air turbulence before they reach the ground. However, in certain weather conditions they can reach ground level and can dislodge unsecured roofing tiles."

7.9.42 This effect is both rare and unpredictable as specific conditions are required for it to occur. It has been known to occur recently at a property in the vicinity of Bristol Airport. In this case the damage was rectified by Bristol Airport. As the strength of vortices is influenced by the size of aircraft, and the Proposed Development does not affect which aircraft are able to use Bristol Airport, it is not expected that there will be any significant effect on the occurrence of vortex damage.

Ground noise assessment criteria

7.9.43 Ground noise encompasses that produced by aircraft activities on the ground, such as during taxiing, manoeuvring, holding on the runway prior to departure, and running engines on the stand. Noise from engine running for test and maintenance purposes is also considered as ground noise.

7.9.44 The assessment methodology for ground noise is set out in detail in **Appendix 7E**, along with the assumptions used to rate ground noise and the results of the assessment.

7.9.45 There is no definitive agreement on the method of assessment of aircraft ground noise. Various methods have been adopted in the past, and these have led to the assessment of ground noise in terms of the equivalent continuous sound level, $L_{Aeq,T}$, for various time periods. As is convention, consideration is given in this assessment to the $L_{Aeq,16h}$ metric for the daytime period of 07:00 to 23:00 and the $L_{Aeq,8h}$ metric for the night-time period of 23:00 to 07:00.

7.9.46 The ground noise level assessed at various receptors can be compared to the existing ambient environmental noise and published guidelines for the assessment of environmental noise. The WHO have previously recommended a guideline value of 50 dB $L_{Aeq,16h}$ to prevent 'moderate' community annoyance and 55 dB $L_{Aeq,16h}$ for 'serious' community annoyance[19].

7.9.47 To put these guidance criteria into context over half of the population is exposed to levels which exceed the 55 dB L_{Aeq} guideline for 'serious' community annoyance. This was confirmed by the results of the Defra funded 2000/2001 National Noise Incidence Study[50].

7.9.48 The ambient noise levels in the area around Bristol Airport have been measured to lie in the range 50 dB(A) to 60 dB(A) $L_{Aeq,16h}$ during the daytime with an underlying background noise level in the range 35 dB(A) to 50 dB(A) L_{AF90} (refer to **Section 7.5**). During the night-time, ambient noise levels

[50] BRE (2002). The National Noise Incidence Study 2000/2001 (United Kingdom): Volume 1 – Noise Levels, Client report number 206344f, [online]. Available at: http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKEwi-t-mQ16jdAhVJUlAKHTMiD-kQFjAAegQIABAC&url=http%3A%2F%2Frandd.defra.gov.uk%2FDocument.aspx%3FDocument%3D10280_NIS1206344f.pdf&usg=AOvVaw2R14Uu8gQF3HgMnuM0z5ui [Checked 7/09/2018].

have been measured to lie in the range 45 dB(A) to 55 dB(A) with underlying background noise levels in the range 35 dB(A) to 45 dB(A) L_{AF90}. The background noise levels better reflect the noise environment in the absence of aircraft noise and other intermittent environmental noise sources.

7.9.49 Based on the standards in BS 8233 for dwellings, the WHO levels would ensure that the recommended indoor noise levels of 35 dB $L_{Aeq,16h}$ within living rooms and 30 dB $L_{Aeq,8h}$ within bedrooms, would be achieved with windows partly open.

7.9.50 If windows are closed, an additional protection of around 10 dB can be expected. If ground noise were to rise above these levels, some form of additional mitigation, such as sound insulation treatment to the dwelling, would be required to protect people inside dwellings from the effects of ground noise.

7.9.51 Sound insulation can only provide so much protection to a dwelling, typically around 35 dB, and once the noise level outside a dwelling rises beyond a certain value, mitigation in itself will not provide sufficient protection.

Residential receptors – absolute levels

7.9.52 The absolute noise values used to assess ground noise at residential receptors are given in **Table 7.23**. These $L_{Aeq,T}$ levels are based on the BS8233 and WHO guidance and professional judgement.

Table 7.23 Ground noise assessment criteria – absolute, daytime and night-time

Action	Effect Level	Daytime external noise level, dB $L_{Aeq,16h}$	Night-time external noise level, dB $L_{Aeq,8h}$
Mitigate and reduce to a minimum	Lowest Observed Adverse Effect Level (LOAEL)	50	45
Avoid	Significant Observed Adverse Effect Level (SOAEL)	60	55
Prevent	Unacceptable Adverse Effect Level (UAEL)	70	65

Non-residential receptors – absolute levels

7.9.53 Absolute noise criteria for non-residential receptors are given in **Table 7.24**.

Table 7.24 Ground noise assessment criteria – non-residential – absolute

Receptor	External noise level threshold
Schools[23]	55 dB $L_{Aeq,30min}$ (daytime)
Places of worship[22]	As per daytime residential – see **Table 7.23**
Amenity areas[22]	55 dB $L_{Aeq,T}$

Relative levels

7.9.54 In addition to the absolute noise level, the relative change in noise level between operational scenarios is used to assess air noise. A potential impact rating for a change in level is given in

Table 7.25. A semantic scale of this type, based on the *Institute of Environmental Management and Assessment noise impact guidelines*[51], has been accepted in various airport Public Inquiries.

Table 7.25 Ground noise impact ratings - change in noise level, outdoors

Change in noise level dB	Subjective impression	Potential Impact classification
0 to 2	Imperceptible change	Negligible
2 to 3	Barely perceptible change	Minor
3 to 6	Perceptible change	Moderate
6 to 9	Up to a halving or a doubling of loudness	Substantial
> 9	Equal to or more than a halving or doubling of loudness	Very substantial

Magnitude of effect and significance

7.9.55 **Table 7.26** shows how this is interpreted into magnitude of effect. This is based on the IEMA *Guidelines on Environmental Noise Impact Assessment*[25] and professional judgement.

Table 7.26 Summary of magnitude of effect – ground noise

Receptor Type	Outdoor noise level, dB	Magnitude of effect				
		Very low	Low	Medium	High	Very High
		Change in noise level, dB(A)				
Residential Day (07:00-23:00)	$50 \leq L_{Aeq,16h} < 60$	0-2	2-3	3-6	6-9	>9
	$L_{Aeq,16h} \geq 60$	0-1	1-2	2-4	4-7	>7
Residential Night (23:00-07:00)	$45 \leq L_{Aeq,8h} < 55$	0-2	2-3	3-6	6-9	>9
	$L_{Aeq,8h} \geq 55$	0-1	1-2	2-4	4-7	>7
Schools	$L_{Aeq,30min} \geq 55$	0-2	2-3	3-6	6-9	>9
Places of worship	$50 \leq L_{Aeq,16h} < 60$	0-2	2-3	3-6	6-9	>9
	$L_{Aeq,16h} \geq 60$	0-1	1-2	2-6	6-9	>9
Amenity Areas	$L_{Aeq,T} \geq 55$	0-2	2-3	3-6	6-9	>9

[51] Guidelines for Environmental Noise Impact Assessment, Institute of Environmental Management & Assessment, October 2014

7.9.56 A potential significant effect (adverse or beneficial) is considered to arise in the above table if the magnitude of the effect is rated as medium or higher. Whether a significant effect arises will depend on context, such as the number of noise sensitive receptors affected and the how often it occurs.

Road traffic noise assessment criteria

7.9.57 Road traffic noise includes noise from road vehicles accessing Bristol Airport as well as that from other road vehicles, not related to Bristol Airport, using the surrounding roads.

7.9.58 The assessment methodology for road traffic noise is set out in detail in **Appendix 7F**, along with the assumptions used to rate road traffic noise and the results of the assessment.

7.9.59 The criteria used in the road traffic noise assessment considers the noise criteria within the *Noise Insulation Regulations 1975 (as amended 1988)* and the *Design Manual for Roads and Bridges* (DMRB)[32].

7.9.60 Road traffic noise is commonly measured and assessed in the UK in terms of the L_{A10} index over the 18-hour period from 06:00 to 24:00. This index, known as $L_{A10,18h}$, is used to rate the potential impacts of road traffic noise arising for example from a change in a highway. Legislation exists in the form of the Noise Insulation Regulations to offer sound insulation to people who are significantly affected by the introduction of a new highway or changes to a highways scheme where the noise level rises above a certain value as a result of the change in traffic flow. Under this legislation, the trigger level for introducing a noise insulation scheme is expressed as a façade level of 68 dB $L_{A10,18h}$. This can be approximately converted back to an $L_{Aeq,16h}$ index by applying a correction of -3 dB(A) to convert from the façade level to a free-field level, and by applying a further correction of -2 dB(A) to convert from $L_{A10,18h}$ to $L_{Aeq,16h}$ for road traffic noise. The resulting trigger level in this case is 63 dB $L_{Aeq,16h}$. This is 5 dB lower than the equivalent $L_{A10,18h}$ value.

7.9.61 The absolute values for impact assessment, and for establishing the LOAEL, SOAEL and UAEL can therefore be determined based on the same principles as described for ground noise above, using the guideline standards for noise levels within dwellings recommended in BS 8233.

Absolute levels

7.9.62 The absolute noise values used to assess road traffic noise between operational scenarios at all receptors are given in **Table 7.27**.

Table 7.27 Road traffic noise assessment criteria – absolute, daytime and night-time

Action	Effect Level	Daytime facade noise level, dB $L_{A10,18h}$
Mitigate and reduce to a minimum	Lowest Observed Adverse Effect Level (LOAEL)	55
Avoid	Significant Observed Adverse Effect Level (SOAEL)	68
Prevent	Unacceptable Adverse Effect Level (UAEL)	75

Relative levels

7.9.63 The subjective importance of changes in road traffic noise level on people relates to the magnitude of the change and, to some extent, when it occurs. A significance rating for a change in level is taken from the DMRB[32].

7.9.64 DMRB provides objective assessment criteria in terms of changes in noise for both the 'short-term' and the 'long-term'. Evidence suggests that residents are much more likely to perceive very small changes in average daytime noise level (1 to 3 dB(A)) following the opening of a major road infrastructure project. Over time, people become accustomed to the change and respond to any changes in traffic flow and associated change in noise conditions with reduced sensitivity.

7.9.65 The only new roads being built as part of the Proposed Development are within Bristol Airport. The receptors affected by these roads will be affected to a greater extent by road traffic on Downside Road. Therefore, the long-term changes in noise level are the only changes relevant to this assessment. These are indicative as the impact of a relative change in level also depends on the absolute level associated with it and the noise conditions prior to the change.

Magnitude of effect and significance

7.9.66 **Table 7.28** shows how this is interpreted into magnitude of effect. This is based on DMRB.

Table 7.28 Summary of magnitude of effect – road traffic noise

Receptor Type	Outdoor noise level, dB	Magnitude of effect				
		Very low	Low	Medium	High	Very High
		Change in noise level, dB(A)				
Residential	$L_{A10,18h} \geq 55$	0-2	2-3	3-5	5-10	>10

7.9.67 A potential significant effect (adverse or beneficial) is considered to arise in **Table 7.28** if the magnitude of the effect is rated as medium or higher. Whether a significant effect arises will depend on context, such as the number of noise sensitive receptors affected and the how often it occurs.

Construction noise and vibration assessment criteria

7.9.68 Construction noise and vibration relates to that produced by construction traffic accessing and departing from the construction sites as well as that produced by demolition, piling and

construction plant operating at the construction sites during each phase of the construction project. The effects of construction noise and vibration have been assessed taking account of their magnitude and also the likely sequence period and daily duration over which they will occur for the affected receptors.

7.9.69 The assessment methodology for construction noise and vibration is set out in detail in **Appendix 7G**, along with the assumptions used to rate construction noise and vibration and the results of the assessment.

7.9.70 In the UK, BS 5228-1[33] is the current guidance and approved code of practice document for the control of construction noise. This provides guidance on methods of controlling noise and provides methods to predict, measure and assess the impact of construction and demolition noise. The guidance in the document can be considered to present recommendations for best practical means to control noise on site.

7.9.71 An informative Annex is included in BS 5228-1 that provides guidance on objectively assessing the significance of construction noise. It advises that a pragmatic approach needs to be taken when assessing the noise effects of any construction project and suggests the guidance provided in the annex would generally only apply to projects of significant size, and lesser projects might not need to be assessed or might only require general consideration of noise effects and mitigation. For large infrastructure projects for example, it highlights historically the procedure that has developed in the UK based on the use of fixed noise limits and also additionally introduces alternative methods used to rate the potential significance of construction noise, based on prevailing ambient noise conditions.

7.9.72 There are no universally recognised or mandatory UK standards or guidelines that set out limits for construction noise. The historical use of fixed noise limits for projects of significant size is described in BS 5228-1 which sets out a subjective principle as follows:

"Noise from construction and demolition sites should not exceed the level at which conversation in the nearest building would be difficult with the windows shut."

7.9.73 It also goes on to describe external noise limits as:

"Noise levels, between say 07:00 and 19:00 hours, outside the nearest window of the occupied room closest to the site boundary should not exceed:

- *70 decibels (dBA) in rural, suburban and urban areas away from main road traffic and industrial noise;*
- *75 decibels (dBA) in urban areas near main roads in heavy industrial areas."*

7.9.74 BS 5228-1 also provides details of alternative methods of assessment to determine the potential for a significant noise effect, reproduced in **Table 7.29**, by testing the construction noise level against the prevailing baseline noise level (that is, the noise level in the absence of construction noise). If the site noise level exceeds the appropriate category value, then a potential significant effect is indicated. The assessor then needs to consider other project-specific factors, such as the number of receptors affected and the duration and character of the impact, to determine if there is a significant effect.

Table 7.29 Example threshold of potential significant effect at dwelling

Assessment category and threshold value period	$L_{Aeq,T}$ Threshold value dB(A)		
	Category A[1]	Category B[2]	Category C[3]
Daytime (07:00–19:00) and Saturdays (07:00–13:00)	65	70	75
Night-time (23:00 – 07:00)	45	50	55

1. Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.
2. Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.
3. Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.

7.9.75 A further alternative method is available where noise levels generated by site activities are deemed to be potentially significant if the total noise (pre-construction ambient plus site noise) exceeds the pre-construction ambient noise by 5 dB or more, subject to lower cut-off values of 65 dB, 55 dB and 45 dB $L_{Aeq,T}$ from site noise alone, for the daytime, evening and night-time periods, respectively; and a duration of one month or more, unless works of a shorter duration are likely to result in a significant effect.

7.9.76 BS 5228-1 also provides examples of noise thresholds used for the introduction of both sound insulation treatment (or the reasonable costs thereof) and temporary re-location. It is stated in BS 5228-1 that:

"If the contractor has applied best practicable means to the provision of mitigation, i.e. all reasonable measures have been taken to reduce the noise levels, but levels are still such that widespread community disturbance or interference with activities or sleep is likely to occur, there are two further provisions that can be made if the construction activities are likely to continue for a significant period of time either continuously or sporadically."

7.9.77 The first provision is noise insulation. For eligibility for sound insulation the daytime Monday to Friday (08:00-18:00) and Saturday morning (08:00-13:00) threshold is 75 dB $L_{Aeq,10h/5h}$ at 1 metre outside the most exposed window or door of the façade of any eligible dwelling. This level also needs to be exceeded for a period of 10 or more days of working in any 15 consecutive days or for a total number of days exceeding 40 in any six consecutive months.

7.9.78 The second provision is temporary or permanent re-housing. For eligibility for temporary rehousing the daytime Monday to Friday (08:00-18:00) and Saturday morning (08:00-13:00) threshold is at least 85 dB $L_{Aeq,10h/5h}$. This level also needs to be exceeded for a period of 10 or more days of working in any 15 consecutive days or for a total number of days exceeding 40 in any six consecutive months.

7.9.79 Typical daytime ambient noise levels around Bristol Airport lie between 50 dB $L_{Aeq,16h}$ and 60 dB $L_{Aeq,16h}$ during the daytime and 45 dB $L_{Aeq,8h}$ and 55 dB $L_{Aeq,8h}$ during the night-time (see **Appendix 7C**). On this basis, based on the ABC method in BS 5228-1, a value of 65 dB $L_{Aeq,12h}$ would be appropriate as a threshold for potentially significant effects to be indicated for the Proposed Development construction works during the daytime and 55 dB $L_{Aeq,8h}$ during the night-time. These criteria should be considered a target not normally to be exceeded at 1m from the façade of any noise sensitive residential or business receptors.

7.9.80 Based on the above and taking account of the ambient noise levels around Bristol Airport, the criteria adopted to assess the impact of construction noise are given in **Table 7.30**.

Table 7.30 Construction noise assessment criteria – absolute

Action	Effect Level	Daytime outdoor noise level, dB $L_{Aeq,12h}$	Night-time outdoor noise level, dB $L_{Aeq,8h}$
Mitigate and reduce to a minimum	Lowest Observed Adverse Effect Level (LOAEL)	55	45
Avoid	Significant Observed Adverse Effect Level (SOAEL)	65	55
Prevent	Unacceptable Adverse Effect Level (UAEL)	85	75

7.9.81 In summary, the threshold for a potentially significant effect from construction noise adopted in this assessment is 65 dB $L_{Aeq,12h}$ for the daytime (07:00-19:00) and 55 dB $L_{Aeq,8h}$ for the night-time (23:00-07:00).

Construction vibration

7.9.82 Vibration levels due to construction works associated with the Proposed Development have been assessed using the significance criteria given in BS5228-2[34] in terms of peak particle velocity (PPV).

7.9.83 Vibration criteria are given for both human and building response, where human response criteria are more stringent. **Table 7.31** contains the assessment criteria used, which are based on the absolute values given in BS 5228-2.

Table 7.31 Vibration limits for human response and building damage

Vibration limit, PPV mms^{-1}	Effect	Effect
< 0.14	Vibration unlikely to be perceptible.	None
0.14	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.	Negligible
0.3	Vibration might be just perceptible in residential environments.	Minor
1.0	It is likely that vibration of this level in residential environments will cause complaint but can be tolerated if prior warning and explanation has been given to residents.	Moderate
7.5	Guide value for cosmetic damage of residential buildings where dynamic loading may lead to resonance.	Significant
10.0	Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments.	Very Significant

7.9.84 On the basis of the above table, the threshold for a potentially significant effect from construction vibration adopted in this assessment is 1.0 mms^{-1} PPV during the daytime (07:00-23:00) and 0.3 mms^{-1} during the night-time.

7.10 Assessment of effects – air noise and vibration

7.10.1 **Section 7D.5** of **Appendix 7D** provides the detailed results of the air noise and vibration assessment. Air noise contours are presented for the primary and secondary or supplementary parameters, along with contour areas, dwelling and population counts within each contour band for residential receptors. Noise exposure values are also presented for noise sensitive non-residential receptors. The likelihood of vibration effects is also assessed. Key results are presented in this section. Note that the significance ratings arising from the effects described here are described in the section titled "Predicted air noise effects and their significance" at the end of **Section 7.10**.

7.10.2 For all tables in this section, areas are rounded to the nearest 0.1km^2. Dwelling and population counts are rounded to the nearest 50 above 100 and to the nearest 10 below 100. Below 10, the actual number is given. Where percentage changes are given, these are based on unrounded values. The counts include all those dwellings or people within a specified contour band and any higher value bands so, for example, any dwellings within a 63 dB contour would also be counted as being within a 63 dB contour as well.

Residential receptors – primary indicators

$L_{Aeq,16h}$ daytime

7.10.3 The dwelling counts within key daytime air noise contours are presented in **Table 7.32.** These contours are presented in **Figure 7D.1** to **Figure 7D.3** and **Figure 7D.26**.

Table 7.32 Air noise dwelling counts, $L_{Aeq,16h}$ average mode summer day

Contour $L_{Aeq,16h}$ dB(A)	**Number of Dwellings**			
	Baseline 2017	**10 mppa 2021**	**12 mppa 2026**	**10 mppa 2026**
51	3,250	3,150	3,100	2,200
63	20	10	10	10

7.10.4 **Table 7.32** shows that in 2017, around 3,250 dwellings are adversely affected by air noise as a result of daytime aircraft operations at Bristol Airport. This total is expected to remain much the same, although marginally reduce going forward to the 10 mppa in 2021 and the 12 mppa scenarios. The sensitivity scenario (first discussed in paragraph 7.1.25) of 10 mppa in 2026 shows a reduction of 30% compared to the 12 mppa scenario. This is due to the conservative assumption that from 2021 onwards, there is no growth in passenger numbers from 10 mppa but fleet replacement occurs as per the 12 mppa 2026 forecast.

7.10.5 Currently and in the future under any scenario, the number of residential receptors experiencing air noise at or above the SOAEL of 63 dB is very small, around 20 now reducing to around 10 in the future.

$L_{Aeq,8h}$ night-time

7.10.6 Turning to the night-time effects, **Table 7.33** shows the dwelling counts within key night-time air noise contours. These contours are presented in **Figure 7D.4** to **Figure 7D.6** and **Figure 7D.27**.

Table 7.33 Air noise dwelling counts, $L_{Aeq,8h}$ average mode summer night

Contour $L_{Aeq,8h}$ dB(A)	Number of Dwellings			
	Baseline 2017	10 mppa 2021	12 mppa 2026	10 mppa 2026
45	3,750	5,150	5,050	4,150
55	150	300	350	250

7.10.7 **Table 7.33** shows that in 2017, around 3,750 dwellings are adversely affected by air noise as a result of night-time aircraft operations at Bristol Airport. This total is expected to increase by 38% going forward to the 10 mppa in 2021 scenario. The 12 mppa scenario gives rise to a similar, albeit slightly lower, number of dwellings compared to the 10 mppa in 2021 scenario. The sensitivity scenario of 10 mppa in 2026 shows a reduction of 18% compared to the 12 mppa scenario. This is due to the conservative assumption that from 2021 onwards, there is no growth in passenger numbers from 10 mppa but fleet replacement occurs as per the 12 mppa 2026 forecast.

7.10.8 Currently, there are around 150 properties exposed to the SOAEL of 55 dB $L_{Aeq,8h}$ or more. This is predicted to increase to around 300 under the 10 mppa in 2021 scenario, with a 5% increase to around 350 under the 12 mppa scenario. The sensitivity scenario of 10 mppa in 2026 shows a reduction of 21% compared to the 12 mppa scenario. This is due to the conservative assumption that from 2021 onwards, there is no growth in passenger numbers from 10 mppa but fleet replacement occurs as per the 12 mppa 2026 forecast.

Residential receptors – supplementary indicators

L_{den} and L_{night}

7.10.9 These parameters show broadly similar results to the $L_{Aeq,16h}$ and $L_{Aeq,8h}$ metrics. The results are given in detail in **Appendix 7D**.

Annoyance

7.10.10 **Table 7.34** shows the number of people likely to be highly annoyed by air noise around Bristol Airport. This does not take account of any improved insulation for dwellings which have benefitted from the noise insulation grant scheme.

Table 7.34 Highly annoyed population count, $L_{Aeq,16h}$ average mode summer day

Metric	Baseline 2017	10 mppa 2021	12 mppa 2026	10 mppa 2026
Population Highly Annoyed	750	750	750	550

7.10.11 This shows that in the future, levels of annoyance will remain as now under the 10 mppa 2021 scenario and 12 mppa 2026 scenarios, reducing only under the sensitivity case of 10 mppa 2026.

Sleep Disturbance

7.10.12 **Table 7.35** shows the number of people likely to be highly sleep disturbed by air noise around Bristol Airport. This does not take account of any improved insulation for dwellings which have benefitted from the noise insulation grant scheme.

Table 7.35 Highly sleep disturbed population count, L_{night} average mode annual night

Metric	Baseline 2017	10 mppa 2021	12 mppa 2026	10 mppa 2026
Population Highly Sleep Disturbed	450	850	800	650

7.10.13 This shows that the number of people highly sleep disturbed will rise by around 90% from 2017 to the 10 mppa in 2021 scenario before reducing slightly, by around 5% under the 12 mppa in 2026 scenario and by around 25% under the 10 mppa in 2026 scenario. Further information on the methodology can be located in **Appendix 7B**, specifically paragraph 7B.1.139, with the detailed results presented in **Appendix 7D**, in Table 7D.28.

N70 and N60

7.10.14 These parameters help to provide context to how the aircraft noise environment might alter between scenarios. People experience aircraft noise as a series of individual events over a day, rather than as a single average noise exposure level. The N70 parameter helps to illustrate how this might change between scenarios. Further explanation on these metrics is given in paragraph 7.1.18. There are no specific criteria for rating the acceptability of N70 or N60 contours.

7.10.15 The number of dwellings exposed to various N70 and N60 contours do not vary in a consistent manner between scenarios, for example comparing the 10 mppa 2021 scenario with 12 mppa 2026 scenario shows that for both N70 and N60 the number of dwellings increase for some contour values and decrease for others. The results and further explanation of these contours are presented in detail in **Appendix 7D**.

SEL and L_{ASmax}

7.10.16 The number of dwellings exposed to individual events of at least 90 dB SEL or 80 dB L_{ASmax} at least once per night is given in **Table 7.36** for each scenario.

Table 7.36 Air noise dwelling counts, $L_{Aeq,16h}$ average mode summer day

Contour, dB(A)	Number of Dwellings			
	Baseline 2017	10 mppa 2021	12 mppa 2026	10 mppa 2026
90 SEL	250	600	100	100
80 L_{ASmax}	250	650	100	100

7.10.17 **Table 7.36** demonstrates that from 2017 to the 10 mppa 2021 scenario, the number of dwellings exposed to potentially significant noise levels of individual aircraft at least once per night will increase from around 250 to around 650. Going forward to 2026, under both the 12 mppa scenario and the sensitivity scenario, this will reduce to around 100.

Single mode

7.10.18 Single mode L_{Aeq} noise contours have been produced which show how, under westerly and easterly conditions, noise exposure levels will vary during the day and night between scenarios. These represent a worst-case day for each scenario.

7.10.19 The number of dwellings exposed between scenarios varies in a similar manner to the average mode L_{Aeq} contours. The results are presented in detail in **Appendix 7D**.

Variation in noise level over the day

7.10.20 The air noise received at a receptor over a single day will vary according to the scenario being considered and also the mode of operations at Bristol Airport. In addition, the noise level will vary by the hour as a result of variations in the hourly timetabling of aircraft over a 24-hour period. **Appendix 7D** provides this detailed information, in terms of $L_{Aeq,1h}$ over the day for 14 representative residential receptors. The receptors assessed are shown in **Figure 7.1** and details are given in **Table 7.10**.

7.10.21 This analysis shows how the noise levels at a given receptor are vary over a typical day, and how this might change under the future scenarios. A description of this is given in **Appendix 7D**.

Non-residential receptors

7.10.22 **Appendix 7D** sets out the $L_{Aeq,16h}$ and, where relevant, the $L_{Aeq,8h}$ noise exposure levels for schools, places of worship and amenity areas within the zone of influence of air noise around Bristol Airport.

Schools

7.10.23 **Appendix 7D** identifies only one school, Winford Primary School, as being exposed to 55 dB $L_{Aeq,16h}$ or more, under all scenarios.

7.10.24 Strictly, the criteria relating to schools is required to be met over a 30-minute period, not over 16 hours. For a reasonable approximation, a one hourly value is appropriate to use for this purpose. It can be deduced that during the school hours, a one hourly L_{Aeq} value could be around 3 dB higher than the 16-hour average. Even however allowing for this fact, only this one school is exposed to noise levels above 55 dB $L_{Aeq,1h}$ under the 2017 baseline and in the future. The noise level over the day at Winford Primary School in 2017 is 58 dB $L_{Aeq,16h}$ and will remain so in 2021 and under the 12 mppa 2026 scenario as well as the sensitivity test.

Places of worship

7.10.25 There are 35 places of worship identified within the zone of influence of air noise around Bristol Airport. Nine of these are currently exposed to air noise at or above 51 dB $L_{Aeq,16h}$. The situation will remain broadly unchanged in both future scenarios, including the sensitivity test. None are currently exposed to a level of 63 dB $L_{Aeq,16h}$, either now or in the future.

Amenity areas

7.10.26 There are 23 amenity areas identified within the ZoI of air noise around Bristol Airport. These vary in nature from playgrounds and parks, to open spaces. Eight of these are currently exposed to a daytime noise exposure level of 50 dB $L_{Aeq,16h}$ or more. Only three amenity areas are exposed to a significant level of 55 dB $L_{Aeq,16h}$ or more currently, these being Cadbury Hill in Yatton, Vee Lane Play Area in Felton, and Felton Common.

7.10.27 This situation will remain broadly the same under the 10 mppa 2021 scenario and also the 12 mppa 2026 scenario. A reduction in the number of those exposed to 50 dB and 55 dB occurs under the sensitivity test, reducing to six and two (Vee Lane Play Area and Felton Common) respectively.

Airborne aircraft vibration

7.10.28 The assessment finds that in 2017, six dwellings which border Felton Common are exposed to maximum noise levels of 97 dB L_{Cmax} or greater. This reduces to two dwellings in all future scenarios due to the introduction of more modern, quieter aircraft types. The maximum noise level instances occur less than once per day on average in all scenarios.

7.10.29 In practice, it is appreciated that there is some variation depending on the specific characteristics of individual dwellings, and therefore it is possible that lower levels of noise may induce perceptible vibration effects. The typical aircraft operations which produce the highest L_{Cmax} noise levels currently at dwellings bordering Felton Common are departures by the Airbus A321 and Boeing 737-800 using runway 09. These two aircraft types combined carried out four runway 09 departures on an average day in 2017. Under the 10 mppa in 2021 scenario, this increases to seven, before reducing to four under the 12 mppa in 2026 scenario and three under the sensitivity scenario of 10 mppa in 2026.

7.10.30 Therefore, vibration due to airborne aircraft is expected to currently affect a small number of dwellings and this is not expected to vary significantly in the future scenarios.

Predicted air noise and vibration effects and their significance

7.10.31 This section sets out the air noise effects arising from operations at Bristol Airport by comparing the following key scenarios:

- Baseline year (2017) vs future (10 mppa in 2021);
- Future (10 mppa in 2021) vs future (12 mppa in 2026) with Proposed Development; and
- Future (10 mppa in 2026) vs future (12 mppa in 2026) with Proposed Development.

7.10.32 This section concentrates primarily on a comparison of the change from without to with the Proposed Development since this is the key comparison required as part of the ES. A subjective account of how noise conditions will change between the baseline year and 2021 has however been included to provide context, should Bristol Airport reaches its permissible capacity and the Proposed Development not proceed.

7.10.33 This section commences by presenting, for key receptors, an account of how noise levels will change under each scenario during the daytime and night-time. It then compares and discusses specific pairs of scenarios separately.

7.10.34 The assessments have all been carried out on the basis of external noise levels, as this is what the main criteria relate to. Therefore, mitigation in the form of improved sound insulation is not accounted for. This will reduce the internal noise levels for dwellings where works have been carried out, and therefore the absolute effects will be lower than assessed for those properties.

Variation in noise levels at representative residential receptors

7.10.35 To explore by how much noise exposure levels over the day and night are expected to change between different scenarios, noise predictions have been undertaken comparing various scenarios and the change expected at a series of representative residential receptors around Bristol Airport. The receptors assessed are shown in **Figure 7.1** and details are given in **Table 7.10**.

7.10.36 **Table 7.37** shows the daytime air noise exposure levels for 10 mppa 2021 (in brackets) and the relative change in noise level for the baseline (2017) and the 12 mppa 2026 scenario, at representative residential receptors. The sensitivity scenario of 10 mppa 2026 without the Proposed Development is also included.

Table 7.37 10 mppa in 2021 air noise exposure levels, $L_{Aeq,16h}$ average mode summer day, and relative change

	Residential receptor	Absolute level ($L_{Aeq,16h}$) dB(A) or change re: 10 mppa 2021			
		Baseline 2017	10 mppa 2021	12 mppa 2026	10 mppa 2026
1	Henley Park, Yatton	0	(53)	0	-1
2	Bishops Road, Cleeve	+1	(53)	0	-1
3	Fountain Treeworks, Brockley	0	(62)	-1	-2
4	Cooks Bridle Path, Downside	+1	(60)	0	-1
5	Downside Road, Downside	0	(60)	-1	-2
6	School Lane, Lulsgate Bottom	0	(62)	-1	-2
7	Hillview Gardens, Felton	0	(55)	0	-1
8	Market Place, Winford	0	(59)	+1	0
9	Chew Magna, North Wick	0	(54)	+1	0
10	Church Road, Norton Malreward	0	(50)	0	-1
11	Lye Mead, Winford	-1	(54)	0	-1
12	Red Hill, Redhill	0	(51)	0	-2
13	Wrington Hill, Wrington	+1	(53)	0	-1
14	Southlands Way, Congresbury	0	(53)	0	-2

7.10.37 For all 14 locations, the absolute noise levels for 10 mppa 2021 lie below the SOAEL of 63 dB. This is the case now and will remain the case for 12 mppa in 2026 with the Proposed Development.

7.10.38 The results show that the change in daytime noise level between the baseline (2017) conditions and those likely to arise for the 10 mppa in 2021 scenario is negligible at all locations. Three locations are 1 dB louder in 2017, one location is 1 dB quieter, and 10 locations have the same noise level, when compared to 10 mppa in 2021.

7.10.39 Considering the 12 mppa scenario, there is also a negligible change in noise levels from those expected for the 10 mppa in 2021 scenario. Two locations are 1 dB louder in the 12 mppa scenario, three locations are 1 dB quieter, and nine locations have the same noise level, when compared to 10 mppa in 2021.

7.10.40 For the sensitivity scenario of 10 mppa in 2026, this shows a negligible reduction in noise against 10 mppa in 2021, with 12 locations being 1-2 dB quieter under the 10 mppa in 2026 scenario, and two locations having the same noise level, when compared to 10 mppa in 2021.

7.10.41 The differences in daytime air noise between the 12 mppa 2026 and 10 mppa 2026 scenarios are also small, with increases in the range 0 to 1 dB generally occurring with the Proposed Development.

7.10.42 **Table 7.38** shows the night-time air noise exposure levels for 10 mppa 2021 (in brackets) and the relative change in noise level against the baseline (2017) and the 12 mppa 2026 scenarios, at

representative residential receptors. The sensitivity scenario of 10 mppa 2026 without the Proposed Development is also included.

Table 7.38 10 mppa in 2021 air noise exposure levels, $L_{Aeq,8h}$ average mode summer night, and relative change

	Residential receptor	Absolute level ($L_{Aeq,8h}$) dB(A) or change re: 10 mppa 2021			
		Baseline 2017	10 mppa 2021	12 mppa 2026	10 mppa 2026
1	Henley Park, Yatton	-2	(50)	0	-1
2	Bishops Road, Cleeve	-2	(50)	0	-1
3	Fountain Treeworks, Brockley	-1	(58)	0	-1
4	Cooks Bridle Path, Downside	-1	(57)	0	-1
5	Downside Road, Downside	-2	(56)	0	-1
6	School Lane, Lulsgate Bottom	-1	(58)	0	-1
7	Hillview Gardens, Felton	-2	(52)	0	-1
8	Market Place, Winford	-1	(56)	+1	0
9	Chew Magna, North Wick	-1	(51)	+1	0
10	Church Road, Norton Malreward	-1	(47)	0	0
11	Lye Mead, Winford	-2	(51)	0	-1
12	Red Hill, Redhill	-2	(48)	0	-2
13	Wrington Hill, Wrington	-2	(55)	0	-1
14	Southlands Way, Congresbury	-2	(49)	0	-1

7.10.43 For six of the fourteen locations, the absolute noise levels for 10 mppa 2021 all lie at or just above the SOAEL of 55 dB, with the remainder lying below. This is also the case for the 12 mppa 2026 scenario. This is similar to the case now with four of the fourteen receptors experiencing night noise at or above the SOAEL.

7.10.44 The results show negligible increases in noise of 1 to 2 dB at all locations, from the baseline (2017) conditions during the night and those likely to arise for 10 mppa 2021, as currently permitted.

7.10.45 Noise levels during the night will also see little variation under 12 mppa 2026 from those expected for 10 mppa 2021, with two locations experiencing a negligible increase of 1 dB and 12 locations where the noise level remains the same.

7.10.46 For the sensitivity case, this shows a reduction in noise against 10 mppa 2021, with 11 locations experiencing a negligible decrease in noise level of 1 to 2 dB and three locations where the noise level remains the same.

7.10.47 The differences in night-time air noise between the 12 mppa 2026 and 10 mppa 2026 scenarios are similar, with the majority of locations experiencing a negligible increase of 1 dB in the 12 mppa scenario.

Baseline year (2017) vs Future (10 mppa in 2021)

7.10.48 Bristol Airport is forecast to grow to its permitted passenger limit of 10 mppa by 2021, irrespective of whether the Proposed Development is permitted. This section summarises the noise effects expected (compared to 2017) as a result of this growth to Bristol Airport's permitted passenger throughput of 10 mppa and the resulting effects on the local community.

7.10.49 Annual aircraft movements are forecast to increase from 73,562 in 2017 to 86,973 in 2021. This increase will be accompanied by the replacement of some of the most common aircraft at Bristol Airport with their more modern equivalents.

7.10.50 Under the 10 mppa in 2021 scenario, while aircraft movements will increase, noise exposure levels during the day are predicted to reduce slightly due to the modernisation of the aircraft fleet, leading to a slight reduction in the number of people adversely affected by air noise. For example, the number of dwellings exposed to noise levels at or above the LOAEL reduces slightly from 3,250 to 3,150. The associated change in noise level at these receptors is negligible, with most experiencing a decrease of less than 1 dB, with some experiencing an increase of less than 1 dB. This is considered to be a very low effect. The small number of dwellings exposed to noise levels at or above the SOAEL, around 20 dwellings in 2017 falling to around 10 in 2021, experience similar changes in noise level and therefore also a very low effect.

7.10.51 As air traffic increases in the future at night, the number of dwellings that are exposed to noise levels at or above the LOAEL will rise, from 3,750 in 2017 to 5,150 in 2021. The number of dwellings exposed to noise levels at or above the SOAEL increases from 150 in 2017 to 300 in 2021. Of these dwellings, 15 will experience an increase in noise level of 2 to 3 dB and an absolute level above the SOAEL. This constitutes a moderate adverse effect for these dwellings. The remaining dwellings experience either lower absolute noise levels or lower changes in noise level, which constitutes a low or very low adverse effect.

7.10.52 In summary, the air noise effects during the day are not expected to materially change between the 2017 and 10 mppa in 2021 scenarios. Approximately 150 dwellings are exposed to significant levels of night-time air noise under the 2017 scenario. This number will increase to around 300 by 2021. Most of these dwellings, however, will experience only a low or very low effect due to negligible changes in noise level. 15 dwellings will experience a moderate adverse effect, located in the Lulsgate Bottom area close to the eastern end of the runway. All of the dwellings exposed to significant levels of external air noise, both now and in 2021, are eligible under Bristol Airport's current sound insulation scheme and therefore have the option to improve the sound insulation to reduce the internal noise levels. To date, the number of properties that have been insulated are as follows:

- 2000 – 2001: circa 261 properties;
- 2015: 14 properties;
- 2016: 40 properties;
- 2017: 8 properties; and
- 2018: 5 properties.

7.10.53 The number of dwellings exposed to a significant level of noise due to individual aircraft events at least once per night increases from 250 in 2017 to 650 under the 10 mppa in 2021 scenario. This is a potentially significant adverse effect.

Future (10 mppa in 2021) to Future (12 mppa in 2026) With Development

7.10.54 This section summarises the noise effects expected (compared to those currently permitted) as a result of growth from 10 mppa to 12 mppa by 2026. It describes and compares the effects of the two key scenarios assessed in this ES.

7.10.55 Annual aircraft movements are forecast to increase from the 86,973 in 2021, based on the permitted passenger throughput of 10 mppa, to 97,393 in 2026, relating to 12 mppa. This increase will be accompanied by a further replacement of some of the most common aircraft types at Bristol Airport with their more modern equivalents.

7.10.56 **Table 7.39** and **Table 7.40** summarise for the daytime and night-time how this change will affect residential dwellings based on the absolute levels arising under the 12 mppa in 2026 scenario and the change in noise level from the 10 mppa in 2021 scenario that is experienced. The beneficial change category includes the small number of dwellings experiencing no change in noise level.

7.10.57 Based on the criteria set out in **Table 7.22**, the number of residential and non-residential receptors experiencing a given air noise effect due to the change between the 10 mppa in 2021 and 12 mppa in 2026 scenarios is then set out in **Table 7.41**.

7.10.58 A potential significant effect (adverse or beneficial) is considered to arise in **Table 7.39** if the magnitude of the effect is rated as medium or higher. Whether a significant effect arises will depend on context, such as the number of noise sensitive receptors affected and how often it occurs.

Table 7.39 Dwellings exposed to absolute air noise and change in air noise, 10 mppa 2021 to 12 mppa 2026, daytime

Subjective description of impact	Contour band, dB $L_{Aeq,16h}$	Number of dwellings in band, 12 mppa (2026)	Beneficial[1] or adverse change	Change in Noise Level, dB Potential Impact Classification				
				Negligible	Minor	Moderate	Substantial	Very Substantial
				0 – 2 dB	2 – 3 dB	3 – 6 dB	6 – 9 dB	>9 dB
Negligible	**51 (LOAEL)**	1,550	Beneficial	1,550	0	0	0	0
		650	Adverse	650	0	0	0	0
Very minor	**54**	250	Beneficial	250	0	0	0	0
		200	Adverse	200	0	0	0	0
Minor	**57**	90	Beneficial	90	0	0	0	0
		250	Adverse	250	0	0	0	0
Minor/ Moderate	**60**	40	Beneficial	40	0	0	0	0
		80	Adverse	80	0	0	0	0
Significant Moderate	**63 (SOAEL)**	0	Beneficial	0	0	0	0	0
		10	Adverse	10	0	0	0	0

Subjective description of impact	Contour band, dB $L_{Aeq,16h}$	Number of dwellings in band, 12 mppa (2026)	Beneficial[1] or adverse change	Change in Noise Level, dB Potential Impact Classification				
				Negligible	Minor	Moderate	Substantial	Very Substantial
				0 – 2 dB	2 – 3 dB	3 – 6 dB	6 – 9 dB	>9 dB
Significant Substantial	**66**	1	Beneficial	1	0	0	0	0
		0	Adverse	0	0	0	0	0
Significant Very Substantial	**69 (UAEL)**	0	Beneficial	0	0	0	0	0
		0	Adverse	0	0	0	0	0
Total		1,950	Beneficial	1,950	0	0	0	0
		1,150	Adverse	1,150	0	0	0	0

1. "Beneficial" rows include a small number of dwellings with zero change.

Table 7.40 Dwellings exposed to absolute air noise and change in air noise, 10 mppa 2021 to 12 mppa 2026, night-time

Subjective description of impact	Contour band, dB $L_{Aeq,8h}$	Number of dwellings in band, 12 mppa (2026)	Beneficial[1] or adverse change	Change in Noise Level, dB Potential Impact Classification				
				Negligible	Minor	Moderate	Substantial	Very Substantial
				0 – 2 dB	2 – 3 dB	3 – 6 dB	6 – 9 dB	>9 dB
Negligible	**45 (LOAEL)**	1,700	Beneficial	1,700	0	0	0	0
		350	Adverse	350	0	0	0	0
Very minor	**48**	600	Beneficial	600	0	0	0	0
		1,500	Adverse	1,500	0	0	0	0
Minor	**51**	200	Beneficial	200	0	0	0	0
		250	Adverse	250	0	0	0	0
Minor/ Moderate	**54**	30	Beneficial	30	0	0	0	0
		90	Adverse	90	0	0	0	0
Significant Moderate	**SOAEL (55)**	80	Beneficial	80	0	0	0	0
		250	Adverse	250	0	0	0	0

Subjective description of impact	Contour band, dB $L_{Aeq,8h}$	Number of dwellings in band, 12 mppa (2026)	Beneficial[1] or adverse change	Change in Noise Level, dB Potential Impact Classification				
				Negligible	Minor	Moderate	Substantial	Very Substantial
				0 – 2 dB	2 – 3 dB	3 – 6 dB	6 – 9 dB	>9 dB
Significant Substantial	**60**	0	Beneficial	0	0	0	0	0
		10	Adverse	10	0	0	0	0
Significant Very Substantial	**63**	1	Beneficial	1	0	0	0	0
		0	Adverse	0	0	0	0	0
Total		2,600	Beneficial	2,600	0	0	0	0
		2,450	Adverse	2,450	0	0	0	0

1. "Beneficial" rows include a small number of dwellings with zero change.

Table 7.41 Air noise effect on number of dwellings and non-residential receptors – 10 mppa 2021 to 12 mppa 2026

Receptor Type	12 mppa outdoor noise level, dB	Beneficial[1] or adverse change	Magnitude of effect				
			Very low	Low	Medium	High	Very High
			Change in noise level, dB(A)				
Residential Day (07:00-23:00)	$51 \leq L_{Aeq,16h} < 63$	Beneficial	1,950	0	0	0	0
		Adverse	1,150	0	0	0	0
	$L_{Aeq,16h} \geq 63$	Beneficial	1	0	0	0	0
		Adverse	10	0	0	0	0
Residential Night (23:00-07:00)	$45 \leq L_{Aeq,8h} < 55$	Beneficial	2,500	0	0	0	0
		Adverse	2,200	0	0	0	0
	$L_{Aeq,8h} \geq 55$	Beneficial	80	0	0	0	0
		Adverse	250	0	0	0	0
Schools	$L_{Aeq,30min} \geq 55$	Beneficial	1	0	0	0	0

Receptor Type	12 mppa outdoor noise level, dB	Beneficial[1] or adverse change	Magnitude of effect				
			Very low	Low	Medium	High	Very High
			Change in noise level, dB(A)				
		Adverse	1	0	0	0	0
Places of worship	$51 \leq L_{Aeq,16h} < 63$	Beneficial	1	0	0	0	0
		Adverse	5	0	0	0	0
	$L_{Aeq,16h} \geq 63$	Beneficial	0	0	0	0	0
		Adverse	0	0	0	0	0
Amenity Areas	$L_{Aeq,T} \geq 55$	Beneficial	0	0	0	0	0
		Adverse	3	0	0	0	0

1. "Beneficial" rows include a small number of dwellings with zero change.

7.10.59 While aircraft movements will increase under the 12 mppa 2026 scenario, this is largely offset by the predicted modernisation of the aircraft fleet. Therefore, noise exposure levels are predicted to remain broadly the same, leading to no material change in the number of those people adversely affected by air noise.

7.10.60 The number of dwellings exposed to daytime noise levels at or above the LOAEL reduces slightly from 3,150 to 3,100. The associated change in noise level at these receptors is negligible, with most experiencing a decrease of less than 1 dB, and some experiencing an increase of less than 1 dB. This constitutes a very low effect. The small number of dwellings exposed to noise levels at or above the SOAEL, around 10 dwellings in both scenarios, experience similar changes in noise level and therefore also a very low effect.

7.10.61 The number of dwellings that are exposed to night-time noise levels at or above the LOAEL will decrease slightly under the 12 mppa scenario, reducing from 5,150 to 5,050. Around 2,600 will experience either no change or a negligible reduction in night noise exposure of 0 to 1 dB, and around 2,450 will experience a negligible increase of 0 to 2 dB in 2026 as compared to 2021. This constitutes a low or very low effect for these dwellings.

7.10.62 In summary, the air noise effects are not expected to materially change between the 10 mppa in 2021 and 12 mppa in 2026 scenarios. Approximately 300 dwellings are exposed to significant levels of night-time air noise under the 10 mppa 2021 scenario. This number will increase to around 350 under the 12mppa 2026 scenario. All of these dwellings, however, will experience only a low or very low effect due to negligible changes in noise level. All of the dwellings exposed to significant levels of external air noise, both in 2021 and 2026, are eligible under Bristol Airport's current sound insulation scheme and therefore have the option to improve the sound insulation to reduce the internal noise levels. All properties can also benefit from the Enhanced Sound Insulation Scheme as well.

7.10.63 The number of dwellings exposed to a significant level of noise due to individual aircraft events at least once per night decreases from 650 under the 10 mppa in 2021 scenario to 100 under the 12 mppa in 2026 scenario. This is a potentially significant adverse effect.

7.10.64 A summary of these noise effects with an overall significance finding is set out in **Table 7.42**.

Table 7.42 Summary of air noise effects, 10 mppa 2021 to 12 mppa 2026

Receptor type	$L_{Aeq,T}$ noise criterion	No Change/Beneficial or Adverse[1]	Receptor Nos. in $L_{Aeq,T}$[2]	Change in noise level	% Change in Highly Annoyed/ Sleep Disturbed[3]	Change in dwellings SEL/L_{ASmax} (night)	Significance of Effect
Residential – Day					-1% A.		**Negligible beneficial, not significant**
LOAEL	51 dB $L_{Aeq,16h}$	No change/Benef.	1,950	Negligible			
		Adverse	650	Negligible			
SOAEL	63 dB $L_{Aeq,16h}$	No change/Benef.	1	Negligible			
		Adverse	10	Negligible			
Residential – Night					-6% S.D.		**Negligible adverse, not significant**
LOAEL	45 dB $L_{Aeq,8h}$	No change/Benef.	2,500	Negligible		70 SEL/60 L_{ASmax} (min 10 events) +1,200 (+23%)	
		Adverse	2,200	Negligible			
SOAEL	55 dB $L_{Aeq,8h}$	No change/Benef.	80	Negligible		90 SEL/80 L_{ASmax} (min 1 event) -550 (-85%)	
		Adverse	250	Negligible			
Schools	55 dB $L_{Aeq,30m}$	No change/Benef.	1	Negligible			**Negligible adverse, not significant**
		Adverse	1	Negligible			
Places of Worship	As residential, day	No change/Benef.	1	Negligible			**Negligible adverse, not significant**
		Adverse	5	Negligible			
Amenity Areas	55 dB $L_{Aeq,T}$	No change/Benef.	0	Negligible			**Negligible adverse,**

Receptor type	$L_{Aeq,T}$ noise criterion	No Change/Beneficial or Adverse[1]	Receptor Nos. in $L_{Aeq,T}$[2]	Change in noise level	% Change in Highly Annoyed/ Sleep Disturbed[3]	Change in dwellings SEL/L_{ASmax} (night)	Significance of Effect
							not significant
		Adverse	3	Negligible			

1. States whether noise change is zero or a reduction (No change/beneficial) or an increase (adverse) moving from scenario A to scenario B.
2. The receptor numbers for LOAEL are those exposed to a noise level equal to or greater than LOAEL (assessed in terms of $L_{Aeq,16h}$ daytime, $L_{Aeq,8h}$ night-time) but less than SOAEL, following a move from scenario A to scenario B. Those for SOAEL, relate to receptors exposed to a noise level equal to or greater than SOAEL. For non-residential receptors, it shows the change in the number of those exposed to the specified criterion level.
3. Percentage changes based on unrounded data.

Future (10 mppa in 2026) to Future (12 mppa in 2026) With Development

7.10.65 The effect of air noise on residential receptors in 2026 without the Proposed Development has been assessed assuming that Bristol Airport is limited to a throughput of 10 mppa in 2026. This is compared in this section to the 12 mppa 2026 scenario with the Proposed Development.

7.10.66 If the Proposed Development does not proceed, Bristol Airport would be constrained from 2021 onwards to 10 mppa. The number of aircraft movements in the 10 mppa in 2026 scenario is assumed to therefore remain at 86,973, as would occur in the 10 mppa in 2021 scenario. If the Proposed Development does proceed, annual aircraft movements are forecast to increase to 97,393 in the 12 mppa in 2026 scenario.

7.10.67 It has been assumed that the same proportion of the aircraft fleet has been modernised in both 2026 scenarios. In practice it is likely that modernisation would occur at a slower rate if passenger throughput were constrained to 10 mppa. This is because the likelihood that more modern, quieter aircraft will be allocated to Bristol Airport is reduced since no potential of growth for the airline will be present. Airlines are already securing flights to destinations and associated 'slots' at airports as far ahead as summer 2020 at the time of writing. If an airline can be assured growth at another airport it may seek to deliver a competitive advantage to secure capacity now. As airports are coming under increased pressure to reduce noise impacts, securing more modern aircraft fleets coupled with growth is a key way in which this can occur sustainably. Therefore, the 10 mppa 2026 scenario is a worst-case comparison for the 12 mppa scenario as the expectation of aircraft modernisation is similar.

7.10.68 **Table 7.43** and **Table 7.44** summarise for the daytime and night-time how this change will affect residential dwellings based on the absolute levels arising under 12 mppa in 2026 scenario and the change in noise level from the 10 mppa in 2026 scenario that is experienced. The beneficial change category includes those dwellings experiencing no change in noise level.

7.10.69 Based on the criteria set out in **Table 7.22**, the number of residential and non-residential receptors experiencing a given air noise effect due to the change between the 10 mppa in 2026 and 12 mppa in 2026 scenarios is then set out in **Table 7.45**.

7.10.70 A potential significant effect (adverse or beneficial) is considered to arise in **Table 7.43** if the magnitude of the effect is rated as medium or higher. Whether a significant effect arises will depend on context, such as the number of noise sensitive receptors affected and how often it occurs.

Table 7.43 Dwellings exposed to absolute air noise and change in air noise, 10 mppa 2026 to 12 mppa 2026, daytime

Subjective description of impact	Contour band, dB $L_{Aeq,16h}$	Number of dwellings in band, 12 mppa (2026)	Beneficial[1] or adverse change	Change in Noise Level, dB Potential Impact Classification				
				Negligible	Minor	Moderate	Substantial	Very Substantial
				0 – 2 dB	2 – 3 dB	3 – 6 dB	6 – 9 dB	>9 dB
Negligible	**51 (LOAEL)**	0	Beneficial	0	0	0	0	0
		2,200	Adverse	2,200	0	0	0	0
Very minor	**54**	0	Beneficial	0	0	0	0	0
		400	Adverse	400	0	0	0	0
Minor	**57**	0	Beneficial	0	0	0	0	0
		350	Adverse	350	0	0	0	0
Minor/ Moderate	**60**	0	Beneficial	0	0	0	0	0
		100	Adverse	100	0	0	0	0
Significant Moderate	**63 (SOAEL)**	0	Beneficial	0	0	0	0	0
		10	Adverse	10	0	0	0	0
Significant Substantial	**66**	0	Beneficial	0	0	0	0	0
		1	Adverse	1	0	0	0	0
Significant Very Substantial	**69 (UAEL)**	0	Beneficial	0	0	0	0	0
		0	Adverse	0	0	0	0	0
Total		0	Beneficial	0	0	0	0	0
		3,100	Adverse	3,100	0	0	0	0

1. "Beneficial" rows include a small number of dwellings with zero change.

Table 7.44 Dwellings exposed to absolute air noise and change in air noise, 10 mppa 2026 to 12 mppa 2026, night-time

Subjective description of impact	Contour band, dB $L_{Aeq,8h}$	Number of dwellings in band, 12 mppa (2026)	Beneficial[1] or adverse change	Change in Noise Level, dB Potential Impact Classification				
				Negligible	Minor	Moderate	Substantial	Very Substantial
				0 – 2 dB	2 – 3 dB	3 – 6 dB	6 – 9 dB	>9 dB
Negligible	**45 (LOAEL)**	0	Beneficial	0	0	0	0	0
		2,050	Adverse	2,050	0	0	0	0
Very minor	**48**	0	Beneficial	0	0	0	0	0
		2,100	Adverse	2,100	0	0	0	0
Minor	**51**	0	Beneficial	0	0	0	0	0
		450	Adverse	450	0	0	0	0
Minor/ Moderate	**54**	0	Beneficial	0	0	0	0	0
		100	Adverse	100	0	0	0	0
Significant Moderate	**SOAEL (55)**	0	Beneficial	0	0	0	0	0
		300	Adverse	300	0	0	0	0
Significant Substantial	**60**	0	Beneficial	0	0	0	0	0
		10	Adverse	10	0	0	0	0
Significant Very Substantial	**63**	0	Beneficial	0	0	0	0	0
		1	Adverse	1	0	0	0	0
Total		0	Beneficial	0	0	0	0	0
		5,050	Adverse	5,050	0	0	0	0

1. "Beneficial" rows include a small number of dwellings with zero change.

Table 7.45 Air noise effect on number of dwellings and non-residential receptors – 10 mppa 2026 to 12 mppa 2026

Receptor Type	12 mppa outdoor noise level, dB	Beneficial[1] or adverse change	Magnitude of effect				
			Very low	Low	Medium	High	Very High
			Change in noise level, dB(A)				
Residential Day (07:00-23:00)	51 ≤ $L_{Aeq,16h}$ < 63	Beneficial	0	0	0	0	0
		Adverse	3,100	0	0	0	0
	$L_{Aeq,16h}$ ≥ 63	Beneficial	0	0	0	0	0
		Adverse	10	1	0	0	0
Residential Night (23:00-07:00)	45 ≤ $L_{Aeq,8h}$ < 55	Beneficial	0	0	0	0	0
		Adverse	4,700	0	0	0	0
	$L_{Aeq,8h}$ ≥ 55	Beneficial	0	0	0	0	0
		Adverse	250	70	0	0	0
Schools	$L_{Aeq,30min}$ ≥ 55	Beneficial	0	0	0	0	0
		Adverse	2	0	0	0	0
Places of worship	51 ≤ $L_{Aeq,16h}$ < 63	Beneficial	0	0	0	0	0
		Adverse	6	0	0	0	0
	$L_{Aeq,16h}$ ≥ 63	Beneficial	0	0	0	0	0
		Adverse	0	0	0	0	0
Amenity Areas	$L_{Aeq,T}$ ≥ 55	Beneficial	0	0	0	0	0
		Adverse	3	0	0	0	0

1. "Beneficial" rows include a small number of dwellings with zero change.

7.10.71 As aircraft movements will increase under the 12 mppa 2026 scenario, as compared to the 10 mppa 2026 scenario, with little difference in fleet mix, noise exposure levels are predicted to rise slightly.

7.10.72 The differences in daytime air noise between the 12 mppa 2026 and 10 mppa 2026 scenarios are small, with increases in the range 0 to 2 dB occurring with the Proposed Development.

7.10.73 The number of dwellings that are exposed to daytime noise levels at or above the LOAEL will rise from 2,200 to 3,100, from 10 mppa to 12 mppa, with these receptors experiencing a negligible increase of generally around 1 dB, a very low effect.

7.10.74 There are very few dwellings exposed to the SOAEL or above during the daytime, around 10 dwellings both under the 10 mppa and 12 mppa scenarios. Under the 12 mppa scenario, these properties, in the Lulsgate Bottom area, would experience a negligible increase in noise exposure level giving rise to a low or very low effect of no significance.

7.10.75 Around 4,150 dwellings are exposed to night-time air noise at or above the LOAEL under 10 mppa in 2026 and this will increase to 5,050 under 12 mppa with the Proposed Development. The change in noise for these receptors under 12 mppa would be negligible, around 1 dB, a very low effect.

7.10.76 Around 250 dwellings are exposed to night-time air noise at or above the SOAEL under 10 mppa in 2026, increasing to around 350 under 12 mppa. Again, the change in noise for these receptors under 12 mppa would be negligible, around 1 dB, a low or very low effect.

7.10.77 In summary, the air noise effects are expected to increase by a low or very low amount under the 12 mppa in 2026 scenario when compared to the 10 mppa in 2026 scenario. Around 10 dwellings are exposed to significant levels of daytime air noise under both scenarios. At night, the number exposed to significant levels of air noise increases from 250 under the 10 mppa in 2026 scenario to 350 under the 12 mppa in 2026 scenario.

7.10.78 A summary of these noise effects with an overall significance finding is set out in **Table 7.46**.

Table 7.46 Summary of air noise effects, 10 mppa 2026 to 12 mppa 2026

Receptor type	$L_{Aeq,T}$ noise criterion	No Change/Beneficial or Adverse[1]	Receptor Nos. in $L_{Aeq,T}$[2]	Change in noise exposure	% Change in Highly Annoyed/ Sleep Disturbed[3]	Change in dwellings SEL/L_{ASmax} (night)	Significance of Effect
Residential – Day					+37% A.		**Negligible adverse, not significant**
LOAEL	51 dB $L_{Aeq,16h}$	No change/Benef.	0	Negligible			
		Adverse	3,100	Negligible			
SOAEL	63 dB $L_{Aeq,16h}$	No change/Benef.	0	Negligible			
		Adverse	10	Negligible			
Residential – Night					+18% S.D.		**Negligible adverse, not significant**
LOAEL	45 dB $L_{Aeq,8h}$	No change/Benef.	0	Negligible		70 SEL/60 L_{ASmax} (min 10 events) +1,950 (+44%)	

Receptor type	$L_{Aeq,T}$ noise criterion	No Change/Beneficial or Adverse[1]	Receptor Nos. in $L_{Aeq,T}$[2]	Change in noise exposure	% Change in Highly Annoyed/ Sleep Disturbed[3]	Change in dwellings SEL/L_{ASmax} (night)	Significance of Effect
		Adverse	4,700	Negligible			
SOAEL	55 dB $L_{Aeq,8h}$	No change/Benef.	0	Negligible		90 SEL/80 L_{ASmax} (min 1 event) No change	
		Adverse	350	Negligible			
Schools	55 dB $L_{Aeq,30m}$	No change/Benef.	0	Negligible			**Negligible adverse, not significant**
		Adverse	2	Negligible			
Places of Worship	As residential, day	No change/Benef.	0	Negligible			**Negligible adverse, not significant**
		Adverse	6	Negligible			
Amenity Areas	55 dB $L_{Aeq,T}$	No change/Benef.	0	Negligible			**Negligible adverse, not significant**
		Adverse	3	Negligible			

1. States whether noise change is zero or a reduction (No change/beneficial) or an increase (adverse) moving from scenario A to scenario B.
2. The receptor numbers for LOAEL are those exposed to a noise level equal to or greater than LOAEL (assessed in terms of $L_{Aeq,16h}$ daytime, $L_{Aeq,8h}$ night-time) but less than SOAEL, following a move from scenario A to scenario B. Those for SOAEL, relate to receptors exposed to a noise level equal to or greater than SOAEL. For non-residential receptors, it shows the change in the number of those exposed to the specified criterion level.
3. Percentage changes based on unrounded data.

7.10.79 In summary, when considering the noise impacts likely to arise as a result of moving from a 10 mppa scenario under 2021 or 2026 to a 12 mppa scenario with the Proposed Development, these are predicted to be low or very low with no significant effects.

7.11 Assessment of effects – ground noise

7.11.1 **Section 7E.5** of **Appendix 7E** provides the detailed results of the ground noise assessment. Ground noise contours are presented, along with contour areas and dwelling counts within each contour band for residential receptors. Noise exposure values are also presented for noise sensitive non-residential receptors. Key results are presented in this section. Note that the significance ratings arising from the effects described here are described in the next section titled "Predicted ground noise effects and their significance". Where percentage changes are given, these are based on unrounded values.

7.11.2 For all tables in this section, areas are rounded to the nearest 0.1km^2. Dwelling and population counts are rounded to the nearest 50 above 100 and to the nearest 10 below 100. Below 10, the

actual number is given. The counts include all those dwellings or people within a specified contour band and any higher value bands so, for example, any dwellings within a 60 dB contour would also be counted as being within a 50 dB contour as well.

Residential receptors

$L_{Aeq,16h}$ daytime

7.11.3 The dwelling counts within key daytime ground noise contours are presented in **Table 7.47**. These contours are presented in **Figure 7E.3** to **Figure 7E.5**.

Table 7.47 Ground noise dwelling counts, $L_{Aeq,16h}$ average summer day

Contour $L_{Aeq,16h}$ dB(A)	Number of Dwellings		
	Baseline 2017	10 mppa 2026	12 mppa 2026
50	70	80	70
60	1	1	1
70	0	0	0

7.11.4 **Table 7.47** shows that in 2017, around 70 dwellings are adversely affected by ground noise as a result of daytime aircraft operations at Bristol Airport. This total is expected to remain much the same, although marginally increase to around 80 in the 10 mppa scenario.

7.11.5 Currently, and in the future under any scenario, only one residential receptor is predicted to experience ground noise above the SOAEL of 65 dB $L_{Aeq,16h}$, which is Core Hill, on Cooks Bridle Path to the north-west of the western stands at Bristol Airport. Core Hill was previously provided a grant of almost £9,000 as part of the 2000-2001 insulation scheme.

7.11.6 No residential receptors are exposed to unacceptable levels of daytime ground noise currently, nor will they be in the future.

$L_{Aeq,8h}$ night-time

7.11.7 Turning to the night-time effects, **Table 7.48** show the dwelling counts within key night-time ground noise contours. These contours are presented in **Figure 7E.6** to **Figure 7E.8**.

Table 7.48 Ground noise dwelling counts, $L_{Aeq,8h}$ average summer night

Contour $L_{Aeq,8h}$ dB(A)	Number of Dwellings		
	Baseline 2017	10 mppa 2026	12 mppa 2026
45	70	100	100
55	1	2	3
65	0	0	0

7.11.8 **Table 7.48** shows that in 2017, around 70 dwellings are adversely affected by ground noise as a result of night-time aircraft operations at Bristol Airport. This total is expected to increase to around 100 under both future scenarios.

7.11.9 Currently, only one residential receptor is predicted to experience ground noise above the SOAEL of 60 dB $L_{Aeq,8h}$, which is the same property as is exposed to the SOAEL in the daytime. This is predicted to increase to two dwellings under the 10 mppa scenario and increase to three dwellings under the 12 mppa scenario. The additional dwellings are The Lodge in the 10 mppa scenario and North Hill House in the 12 mppa scenario. Both of these are also on Cooks Bridle Path.

7.11.10 No residential receptors are exposed to unacceptable levels of night-time ground noise currently, nor will they be in the future.

Variation in noise levels at representative residential receptors

7.11.11 To explore by how much noise exposure levels in the day and night periods are expected to change between different scenarios, noise predictions have been undertaken comparing various scenarios and the change expected for all residential receptors, considered in different noise exposure bands. These tables depict, for each noise exposure band, the number of receptors that will experience either no change/a beneficial change in noise or an adverse change in noise. These tables are presented in **Appendix 7E**. To further demonstrate these effects, an assessment of the expected noise change between various scenarios is also provided at a series of representative residential receptors around Bristol Airport. The receptors assessed are shown in **Figure 7.2**.

7.11.12 **Table 7.49** shows the daytime and night-time ground noise exposure levels for 10 mppa 2026 (in brackets) and the relative change in noise level for the baseline (2017) and the 12 mppa 2026 scenario, at representative residential receptors.

Table 7.49 10 mppa 2026 air noise exposure levels, average summer day and night, and relative change

Receptor	Location	Daytime $L_{Aeq,16h}$ (dB)			Night-time $L_{Aeq,8h}$ (dB)		
		2017	10 mppa 2026	12 mppa 2026	2017	10 mppa 2026	12 mppa 2026
A	Cooks Bridle Path, Downside	0	(61)	+2	-3	(59)	+2
B	Downside Road, Lulsgate Bottom	0	(58)	-6	-2	(54)	-7
C	School Lane, Lulsgate Bottom	0	(52)	0	-4	(50)	-1
D	Red Hill (A38), Redhill	0	(45)	+1	-2	(41)	0
E	Winters Lane, Redhill	0	(47)	+1	-2	(44)	0
F	Downside Road, Downside	0	(53)	+1	-1	(50)	+1
G	Downside Road, Downside	0	(50)	-1	-2	(47)	-1
H	Downside Road, Lulsgate Bottom	+2	(56)	-5	-3	(53)	-6
I	Bridgwater Road (A38), Lulsgate Bottom	0	(50)	-1	-3	(47)	-1
J	Red Hill (A38), Redhill	0	(43)	0	-2	(39)	0
K	Winters Lane, Redhill	0	(50)	+1	-2	(46)	+1

7.11.13 In both the daytime and night-time periods for the 10 mppa scenario, one of the 11 locations lies at or above the SOAEL, which is Cooks Bridle Path. This is also the situation both in 2017 and under the 12 mppa scenario.

7.11.14 **Table 7.49** shows that in the daytime period, there is in general little change between the 2017 and 10 mppa scenarios, with no change for 10 of the 11 locations, and a negligible decrease of 2 dB for the 10 mppa scenario at one location. In the night-time period, there are increases from 2017 to the 10 mppa scenario. For eight of these locations this is a negligible increase of 2 dB, but for four locations this is a moderate increase of 3 to 4 dB.

7.11.15 Considering the 12 mppa scenario, in the daytime there are generally negligible changes from the 10 mppa scenario; five locations experience an increase of 1 to 2 dB, two locations experience no change, and two locations experience a decrease of 1 dB. Some locations, in particular those in Lulsgate Bottom, benefit from the additional screening resulting from the Proposed Development being built out and therefore two locations experience moderate reductions in noise level of 5-6 dB under the 12 mppa 2026 scenario. This situation is similar in the night-time period, with one location experiencing a negligible increase of 1 dB, five locations experiencing no change, and three locations experiencing a negligible decrease of 1 dB. The same two locations benefit from the additional screening, experiencing moderate or substantial decreases of 6 or 7 dB under the 12 mppa scenario.

Non-residential receptors

7.11.16 **Appendix 7E** sets out the $L_{Aeq,16h}$ and $L_{Aeq,8h}$ noise exposure levels for schools, places of worship and amenity areas within the ZoI of ground noise around Bristol Airport.

Schools

7.11.17 **Appendix 7E** identifies no schools, as being within the ZoI of ground noise around Bristol Airport.

Places of worship

7.11.18 There are two places of worship identified within the ZoI of air noise around Bristol Airport, which are St. Katharine's Church, Felton, and Christ Church, Redhill. Neither of these are exposed to ground noise at or above the LOAEL under any of the three scenarios.

Amenity areas

7.11.19 There are two amenity areas identified within the ZoI of ground noise around Bristol Airport. These are Vee Lane Play Area in Felton and Felton Common. Neither of these areas are exposed to ground noise levels at or above the threshold level of 55 dB $L_{Aeq,16h}$ under any of the three scenarios.

Predicted ground noise effects and their significance

7.11.20 This section sets out the ground noise effects arising from operations at Bristol Airport by comparing the following key scenarios:

- Baseline year (2017) vs future (10 mppa in 2026); and
- Future (10 mppa in 2026) vs future (12 mppa in 2026) With Proposed Development

7.11.21 Note that in the future, as the modernisation of the fleet will have little influence on the ground noise levels produced by aircraft, it is not necessary to consider a future 10 mppa 2021 scenario as this would be expected to give rise to the same noise effects as those under 10 mppa in 2026.

Baseline year (2017) vs Future (10 mppa in 2026)

7.11.22 Bristol Airport is forecast to grow irrespective of whether the Proposed Development proceeds. This section summarises the noise effects expected (compared to 2017) as a result of this growth to Bristol Airport's permitted passenger throughput of 10 mppa and the resulting effects on the local community.

7.11.23 Annual aircraft movements are forecast to increase from 73,562 in 2017 to 86,973 in the 10 mppa scenario.

7.11.24 Under the 10 mppa scenario, aircraft movements will remain similar in the daytime, increasing by 2% compared to 2017. Additionally, there is a reduction in the proportion of movements by propeller aircraft, which are the loudest aircraft category for ground noise. Therefore, daytime ground noise exposure levels are predicted to remain similar to now.

7.11.25 The number of dwellings exposed to noise levels at or above the LOAEL in the daytime increases slightly from 70 to 80. The associated change in noise level at these 80 receptors is negligible, with around half experiencing an increase of 1 dB or less, and the other half experiencing no change or a decrease of 1 dB or less. This is considered to be a very low effect. The one dwelling exposed to noise levels at or above the SOAEL experiences similar changes in noise level and therefore is also a very low effect.

7.11.26 At night, aircraft movements increase by around 50% compared to 2017, and are primarily made up of medium size jets both now and under the 10 mppa 2026 scenario. This results in around 100 dwellings exposed to the LOAEL or above under the 10 mppa 2026 scenario, compared to around 70 in 2017. Of these dwellings, 25 will experience a moderate increase in noise level of 3 to 4 dB. This constitutes a moderate adverse effect for these dwellings. The remainder experience an increase of 1 to 3 dB, which is considered to be a low or very low effect. One dwelling is exposed to the SOAEL under the 2017 scenario, which is Core Hill, on Cooks Bridle Path. A second dwelling becomes exposed to the SOAEL under the 10 mppa scenario, which is The Lodge, also on Cooks Bridle Path. These dwellings experience a change in noise level of 2 to 4 dB which constitutes a medium effect.

7.11.27 In summary, only one dwelling is currently experiencing significant levels of ground noise, which is expected to increase to two in the 10 mppa scenario. These dwellings also experience a minor or moderate increase in noise level, constituting a medium effect of moving from 2017 to the 10 mppa in 2026 scenario which is rated as probably significant. In practice, these dwellings are eligible under Bristol Airport's current sound insulation scheme (which is based on the air noise effect).

Future (10 mppa in 2026) to Future (12 mppa in 2026) With Development

7.11.28 This section summarises the noise effects expected (compared to that currently permitted) as a result of growth to 12 mppa in 2026. It describes and compares the effects of the two key scenarios assessed in this ES.

7.11.29 Annual aircraft movements are forecast to increase from 86,973 in the 10 mppa scenario to 97,393 in the 12 mppa scenario.

7.11.30 **Table 7.50** and **"Beneficial"** rows include a small number of dwellings with zero change.

7.11.31 **Table 7.51** summarise for the daytime and night-time how this change will affect residential dwellings based on the absolute levels arising under 12 mppa in 2026 scenario and the change in noise level from the 10 mppa in 2026 scenario that is experienced. The beneficial change category includes those dwellings experiencing no change in noise level.

7.11.32 Based on the criteria set out in **Table 7.26**, the number of residential and non-residential receptors experiencing a given air noise effect due to the change between the 10 mppa in 2026 and 12 mppa in 2026 scenarios is set out in **Table 7.52**.

7.11.33 A potential significant effect (adverse or beneficial) is considered to arise in **Table 7.52** if the magnitude of the effect is rated as medium or higher. Whether a significant effect arises will depend on context, such as the number of noise sensitive receptors affected and how often it occurs.

Table 7.50 Dwellings exposed to absolute ground noise and change in ground noise, 10 mppa 2026 to 12 mppa 2026, daytime

Subjective description of impact	Contour band, dB $L_{Aeq,16h}$	Number of dwellings in band, 12 mppa (2026)	Beneficial[1] or adverse change	Change in Noise Level, dB Potential Impact Classification				
				Negligible	Minor	Significant Moderate	Significant Substantial	Significant Very Substantial
				0 – 2 dB	2 – 3 dB	3 – 6 dB	6 – 9 dB	>9 dB
Negligible	**50 (LOAEL)**	60	Beneficial	20	5	30	4	0
		10	Adverse	10	0	0	0	0
Minor	**55**	0	Beneficial	0	0	0	0	0
		3	Adverse	3	0	0	0	0
Significant Moderate	**60 (SOAEL)**	0	Beneficial	0	0	0	0	0
		1	Adverse	1	0	0	0	0
Significant Substantial	**65**	0	Beneficial	0	0	0	0	0
		0	Adverse	0	0	0	0	0
Significant Very Substantial	**70 (UAEL)**	0	Beneficial	0	0	0	0	0
		0	Adverse	0	0	0	0	0
Total		60	Beneficial	20	5	30	4	0
		10	Adverse	10	0	0	0	0

1. "Beneficial" rows include a small number of dwellings with zero change.

Table 7.51 Dwellings exposed to absolute ground noise and change in ground noise, 10 mppa 2026 to 12 mppa 2026, night-time

Subjective description of impact	Contour band dB $L_{Aeq,8h}$	Number of dwellings in band, 10 mppa (2026)	Beneficial[1] or adverse change	Change in Noise Level, dB Potential Impact Classification				
				Negligible	Minor	Significant Moderate	Significant Substantial	Significant Very Substantial
				0 – 2 dB	2 – 3 dB	3 – 6 dB	6 – 9 dB	>9 dB
Negligible	**45 (LOAEL)**	80	Beneficial	40	9	30	4	0
		30	Adverse	30	0	0	0	0
Minor	**50**	0	Beneficial	0	0	0	0	0
		2	Adverse	2	0	0	0	0
Significant Moderate	**55 (SOAEL)**	0	Beneficial	0	0	0	0	0
		2	Adverse	2	0	0	0	0
Significant Substantial	**60**	0	Beneficial	0	0	0	0	0
		1	Adverse	1	0	0	0	0
Significant Very Substantial	**65 (UAEL)**	0	Beneficial	0	0	0	0	0
		0	Adverse	0	0	0	0	0
Total		80	Beneficial	40	9	30	4	0
		30	Adverse	30	0	0	0	0

1. "Beneficial" rows include a small number of dwellings with zero change.

Table 7.52 Ground noise effect on number of dwellings and non-residential receptors – 10 mppa 2026 to 12 mppa 2026

Receptor Type	12 mppa outdoor noise level, dB	Beneficial[1] or adverse change	Magnitude of effect				
			Very low	Low	Medium	High	Very High
			Change in noise level, dB(A)				
Residential Day (07:00-23:00)	50 ≤ $L_{Aeq,16h}$ < 60	Beneficial	20	5	30	4	0
		Adverse	10	0	0	0	0
	$L_{Aeq,16h}$ ≥ 60	Beneficial	0	0	0	0	0

Receptor Type	12 mppa outdoor noise level, dB	Beneficial[1] or adverse change	Magnitude of effect				
			Very low	Low	Medium	High	Very High
			Change in noise level, dB(A)				
		Adverse	0	1	0	0	0
Residential Night (23:00-07:00)	$45 \leq L_{Aeq,8h} < 55$	Beneficial	40	9	30	4	0
		Adverse	30	0	0	0	0
	$L_{Aeq,8h} \geq 55$	Beneficial	0	0	0	0	0
		Adverse	3	0	0	0	0
Schools	$L_{Aeq,30min} \geq 55$	Beneficial	1	0	0	0	0
		Adverse	0	0	0	0	0
Places of worship	$50 \leq L_{Aeq,16h} < 60$	Beneficial	0	0	0	0	0
		Adverse	0	0	0	0	0
	$L_{Aeq,16h} \geq 60$	Beneficial	0	0	0	0	0
		Adverse	0	0	0	0	0
Amenity Areas	$L_{Aeq,T} \geq 55$	Beneficial	0	0	0	0	0
		Adverse	0	0	0	0	0

1. "Beneficial" rows include a small number of dwellings with zero change.

7.11.34 Under the 12 mppa scenario, aircraft movements will increase by 17% in the daytime compared to the 10 mppa scenario. The aircraft mix is forecast to remain broadly similar, with a small shift from small to medium sized jets. Therefore, with no change in infrastructure, the noise levels would be expected to increase by a negligible amount, around 1 dB, at most locations. However, the Proposed Development includes some buildings which will provide additional screening to certain receptors, in particular those in the Lulsgate Bottom area, which leads to decreased ground noise levels.

7.11.35 The number of dwellings exposed to the LOAEL in the daytime decreases slightly from 80 under the 10 mppa scenario to 70 under the 12 mppa scenario. 25 of these dwellings experience a negligible or minor reduction in absolute noise level and 10 experience a negligible increase in noise level, which constitutes a low or very low effect of no significance. 30 dwellings experience a moderate

decrease in noise level, and 4 dwellings experience a substantial decrease in noise level. These constitute medium and high beneficial effects respectively for these dwellings. One dwelling is exposed to the SOAEL under both scenarios, which is Core Hill, on Cooks Bridle Path. This dwelling experiences a negligible increase in noise level.

7.11.36 At night the situation is broadly similar, with aircraft movements increasing by around 15% compared to the 10 mppa scenario and similar small changes in fleet mix. Therefore, negligible increases would be normally expected other than where the additional screening provided by the Proposed Development has a beneficial effect.

7.11.37 The other factor at night is the variation in the restriction of night-time APU usage on stands 38 and 39. This results in slight increases for the dwellings closest to these stands, although the increases are still less than 2 dB and therefore of negligible magnitude.

7.11.38 This results in around 100 dwellings exposed to the LOAEL or above at night under both future scenarios. Of these, around 50 experience a negligible or minor reduction in absolute noise level and 10 experience a negligible increase in noise level, which constitutes a low or very low effect of no significance. 30 dwellings experience a moderate decrease in noise level, and 4 dwellings experience a substantial decrease in noise level. These constitute medium and high beneficial effects respectively for these dwellings. Two dwellings are exposed to the SOAEL under the 10 mppa scenario, which increases to three under the 12 mppa scenario. This additional dwelling is located on Cooks Bridle Path, to the north-west of the western stands at Bristol Airport. These dwellings experience a negligible increase in noise level of 1 to 2 dB and therefore a low effect.

7.11.39 In summary, only one dwelling is exposed to significant levels of ground noise under the 10 mppa scenario in the daytime period, which is expected to remain the case under the 12 mppa scenario. Two dwellings are exposed to significant levels of ground noise in the night-time period, which is expected to increase to three under the 12 mppa scenario. These dwellings experience a negligible increase in noise level of 1 to 2 dB, constituting a low effect of moving from the 10 mppa to the 12 mppa scenario which is rated as not significant. In practice, these three dwellings are all eligible under Bristol Airport's current sound insulation scheme (which is based on the air noise effect).

7.11.40 30 dwellings experience a medium decrease in noise level as a result of moving from the 10 mppa to the 12 mppa scenario which is rated as probably significant (beneficial). 4 dwellings experience a high decrease in noise level as a result of moving from the 10 mppa to the 12 mppa scenario which is rated as significant (beneficial).

7.11.41 A summary of these noise effects is set out in **Table 7.53**.

Table 7.53 Summary of ground noise effects, 10 mppa 2026 to 12 mppa 2026

Receptor type	$L_{Aeq,T}$ noise criterion	No change/Beneficial or Adverse[1]	Receptor Nos. in $L_{Aeq,T}$[2]	Change in noise exposure	Significance of Effect
Residential - Day					**Moderate beneficial, probably significant**
LOAEL	50 dB $L_{Aeq,16h}$	No change/Beneficial	20	Negligible	
			5	Minor	
			30	Moderate	
			4	Substantial	

Receptor type	$L_{Aeq,T}$ noise criterion	No change/Beneficial or Adverse[1]	Receptor Nos. in $L_{Aeq,T}$[2]	Change in noise exposure	Significance of Effect
		Adverse	10	Negligible	
			3	Minor	
SOAEL	60 dB $L_{Aeq,16h}$	No change/Beneficial.	0	N/A	
		Adverse	1	Negligible	
Residential - Night					**Moderate beneficial, probably significant**
LOAEL	45 dB $L_{Aeq,8h}$	No change/Beneficial.	40	Negligible	
			9	Minor	
			30	Moderate	
			4	Substantial	
		Adverse	30	Negligible	
			2	Minor	
SOAEL	55 dB $L_{Aeq,8h}$	No change/Beneficial.	0	N/A	
		Adverse	3	Negligible	
Schools	55 dB $L_{Aeq,30m}$	No change/Beneficial	1	Negligible	**Negligible beneficial, probably significant**
Places of Worship	As residential, day		0	N/A	None
Amenity Areas	55 dB $L_{Aeq,T}$		0	N/A	None

1. States whether noise change is zero or a reduction (No change/beneficial) or an increase (adverse) moving from scenario A to scenario B.

2. The receptor numbers for LOAEL are those exposed to a noise level equal to or greater than LOAEL (assessed in terms of $L_{Aeq,16h}$ daytime, $L_{Aeq,8h}$ night-time) but less than SOAEL, following a move from scenario A to scenario B. Those for SOAEL, relate to receptors exposed to a noise level equal to or greater than SOAEL. For non-residential receptors, it shows the change in the number of those exposed to the specified criterion level.

7.12 Assessment of effects – road traffic noise

7.12.1 **Section 7F.5** of **Appendix 7F** provides the detailed results of the road traffic noise assessment. Noise has been assessed due to road traffic using roads in the vicinity of Bristol Airport, specifically the A38, Downside Road, West Lane, and North Side Road. Road traffic noise contours are presented, along with receptor counts within each contour band. Key results are presented in this section.

7.12.2 For all tables in this section, receptor counts are rounded to the nearest 50 above 100 and to the nearest 10 below 100. Below 10, the actual number is given. Where percentage changes are given, these are based on unrounded values.

7.12.3 **Table 7.54** shows the number of receptors exposed to the LOAEL, SOAEL and UAEL values.

Table 7.54 Number of receptors, $L_{A10,18h}$

Contour $L_{A10,18h}$ dB(A)	Number of Receptors		
	Baseline 2017	10 mppa 2026	12 mppa 2026
55	100	100	100
68	20	30	30
75	2	4	4

7.12.4 **Table 7.54** shows that currently, around 100 of the assessed receptors are adversely affected by road traffic noise in the vicinity of Bristol Airport. This total is expected to remain much the same going forward to 2026 under both scenarios.

7.12.5 Currently, around 20 of the assessed residential receptors are predicted to experience road traffic noise above the SOAEL of 68 dB $L_{A10,18h}$. This is predicted to increase to around 30 in 2026 under both scenarios.

7.12.6 Two of the assessed receptors are currently exposed to road traffic levels above the UAEL. In 2026, four receptors are exposed to this level under both scenarios. These are all located very close to the A38 and are comprised of the Forge Motel and surrounding buildings. The Forge Motel and Hathaway House have unlikely benefitted from previous noise insulation since these are commercial businesses. Other residential properties in the vicinity that have benefitted from the 2000-2001 noise insulation scheme are as follows:

- 1 School Lane, Felton;
- 2 School Lane, Felton;
- 1 Church View, School Lane, Felton;
- 2 Church View, School Lane, Felton;
- Clyde House, School Lane, Felton;
- The Cottage, School Lane, Felton; and
- End House, School Lane, Felton.

Predicted road traffic noise effects and their significance

7.12.7 This section sets out the road traffic noise effects arising from operations at Bristol Airport by comparing the following key scenarios:

- Baseline year (2017) vs future (10 mppa in 2026); and
- Future (10 mppa in 2026) vs future (12 mppa in 2026) With Proposed Development.

Baseline year (2017) vs Future (10 mppa in 2026)

7.12.8 Road traffic on roads in the vicinity of Bristol Airport is forecast to increase by around 30% from the baseline (2017) scenario to the 10 mppa 2026 scenario. This results in a negligible increase in noise exposure for the dwellings affected by road traffic noise of 1 to 2 dB for all assessed dwellings, constituting a very low effect. The number of receptors exposed to the LOAEL is around 100 in 2017

and remains similar under the 10 mppa 2026 scenario. The corresponding number of receptors exposed to the SOAEL increases from around 20 to around 30.

Future (10 mppa in 2026) to Future (12 mppa in 2026) With Development

7.12.9 This section summarises the noise effects expected (compared to those currently permitted) as a result of growth from 10 mppa to 12 mppa and the resulting effects on the local community. It describes and compares the effects of the two key scenarios assessed in this ES.

7.12.10 Road traffic on the roads in the vicinity of Bristol Airport is forecast to increase by around 15% from the baseline (2017) scenario to the 10 mppa 2026 scenario. This results in a negligible increase in noise exposure for the dwellings affected by road traffic noise of less than 1 dB for all assessed dwellings, constituting a very low effect. There are also negligible beneficial changes for a small number of dwellings as a result of infrastructure changes related to the Proposed Development. The number of receptors exposed to the LOAEL, SOAEL, and UAEL are around 100, 30, and 4 respectively under both scenarios.

7.12.11 A summary of these noise effects is set out in **Table 7.55.**

Table 7.55 Summary of road traffic noise effects, 10 mppa 2026 to 12 mppa 2026

Receptor type	$L_{Aeq,T}$ noise criterion	No change/Beneficial or Adverse[1]	Receptor Nos. in $L_{Aeq,T}$[2]	Change in noise exposure	Significance of Effect
Residential - Day					**Negligible adverse, not significant**
LOAEL	55 dB $L_{A10,18h}$	No change/Benef.	4	Negligible	
		Adverse	80	Negligible	
SOAEL	68 dB $L_{A10,18h}$	No change/Benef.	0	N/A	
		Adverse	30	Negligible	
UAEL	75 dB $L_{A10,18h}$	No change/Benef.	0	N/A	
		Adverse	4	Negligible	

1. States whether noise change is zero or a reduction (No change/beneficial) or an increase (adverse) moving from scenario A to scenario B.

2. The receptor numbers for LOAEL are those exposed to a noise level equal to or greater than LOAEL (assessed in terms of $L_{A10,18h}$) but less than SOAEL, following a move from scenario A to scenario B. Those for SOAEL, relate to receptors exposed to a noise level equal to or greater than SOAEL.

7.13 Assessment of Effects – construction noise and vibration

7.13.1 A detailed assessment of construction noise and vibration is presented in **Appendix 7G**. A summary of the key findings is presented here to describe the effects and significance of noise and vibration arising from the Proposed Development.

7.13.2 Construction will take place at different times over a period of up to seven years. Some works will occur in isolation while others will occur in phases, some of which might overlap in time. This raises the possibility of a noise sensitive receptor being affected simultaneously by different types of operations at a given site. In addition, works at multiple sites might take place at the same time. To

assess this risk, consideration has been given to the current programme of works (refer to **Chapter 2: Description of the Proposed Development**). Construction noise levels likely to arise at a series of representative noise sensitive receptors have been determined based on a single phase of works, for overlapping phases of works (where relevant) as well as in conjunction with any works packages programmed to occur at a similar time.

7.13.1 Predictions of construction noise values have been made using the methods described in BS 5228-1. Assumptions used for these calculations are described in **Appendix 7G**.

7.13.2 Noise has been predicted at representative noise sensitive receptors for each construction site of the Proposed Development and for each phase of construction activity. Where phases of construction activity at a site are expected to be concurrent, a worst-case value has been predicted alongside noise estimates for each phase. Worst-case values have also been predicted where work is provisionally scheduled to occur concurrently at different construction sites.

7.13.3 Construction sites where piling and vibratory compaction will take place have been identified. The vibration impact on the identified noise sensitive receptors has been considered with reference to guidance given in BS5228-2.

7.13.4 The Proposed Development includes a number of buildings, structures and surface works, which are summarised in

7.13.5 **Table** 7.56. Most construction works will take place during the daytime during the hours of 07:30 to 18:00 Monday to Friday and Saturday 08:00 to 13:00. There is no planned working on Sundays or Bank Holidays. Some work will need to be undertaken at night, specifically for the east taxiway link and taxiway widening fillets. These works are scheduled to occur between 23:00 and 06:00 over a 6-month period. This is the only night-time construction work scheduled.

Table 7.56 Construction sites of the Proposed Development

Development	Access route	Provisional dates	Notes
New arrivals area	North Side Road	11/2019 – 04/2020	
South terminal extension	North Side Road	11/2019 – 03/2021	
West terminal extension (Phase 2A)	North Side Road	09/2020 – 06/2021	
West terminal extension (Phase 2B)	North Side Road	11/2024 – 03/2026	
New service yard	North Side Road	11/2025 – 03/2026	
Walkway and east pier	North Side Road	09/2025 – 06/2026	
New canopy to front of existing terminal	North Side Road	09/2022 – 05/2023	
Multi-storey car park	North Side Road	09/2024 – 07/2025	
Gyratory road with internal surface car parking	North Side Road	10/2020 – 06/2021	
East taxiway link	North Side Road	01/2024 – 06/2024	Night-time
Silver Zone Car Park Extension (Phase 2	Silver Zone Car Park	04/2019 – 07/2019	
Highway improvements (A38)	A38	10/2025 – 04/2026	
Taxiway widening and fillets	North Side Road	01/2024 – 06/2024	Night-time
Silver Zone Car Park Extension (Phase 1)	Silver Zone Car Park	10/2019 – 11/2019	

7.13.6 Construction noise and vibration impacts likely to arise as a result of the Proposed Development have been assessed having regard to representative sensitive receptors in the vicinity of the proposed works. These 11 receptors, A to K, can be seen in **Figure 7.2** and are described in **Appendix 7G**.

7.13.7 Baseline noise levels for receptors A to D, used in determining the noise assessment criteria, have been taken from the baseline measurements carried out at these locations, as described in **Appendix 7C**. Typical daytime ambient noise levels around Bristol Airport lie between 50 dB $L_{Aeq,12h}$ and 60 dB $L_{Aeq,12h}$ during the daytime (refer to **Appendix 7C**) and 45 dB $L_{Aeq,8h}$ and 55 dB $L_{Aeq,8h}$ during the night-time.

7.13.8 On this basis, based on the ABC method in BS 5288-1, the threshold for a potentially significant effect from construction noise adopted in this assessment is 65 dB $L_{Aeq,12h}$ for the daytime (07:00-19:00) and 55 dB $L_{Aeq,8h}$ for the night-time (23:00-07:00).

7.13.9 The threshold adopted for a potentially significant effect from construction vibration in this assessment is 1.0 mms^{-1} PPV during the daytime (07:00-23:00) and 0.3 mms^{-1} during the night-time (23:00-07:00).

7.13.10 The construction noise levels associated with the Proposed Development have been assessed at each of the eleven representative receptors for each construction site, for each phase of work. These are tabulated in in **Appendix 7G.**

Predicted construction noise and vibration effects and their significance

7.13.11 **Section 7G.6** of **Appendix 7G** provides the detailed results of the construction noise assessment. Construction noise and vibration predictions are presented, along with receptor counts within each relevant noise band. Key results are presented in this section. This section sets out the noise and vibration effects arising due to construction related to the Proposed Development.

Daytime noise

7.13.12 On an individual site and phase basis, no significant effects from daytime construction noise are expected, with one exception.

7.13.13 Noise sensitive receptors adjacent to the A38 are predicted to be exposed to construction noise levels above the adopted daytime SOAEL and threshold for a potentially significant effect from the A38 highway improvements due to their close proximity to the construction site. The predictions indicate that this threshold is likely to be exceeded for all phases of work associated with the A38 highway improvements throughout the six-month duration of these works, with daytime noise levels lying in the range 68 to 72 dB $L_{Aeq,12h}$. As a result, a significant effect is predicted in the absence of any mitigation.

7.13.14 Certain phases of daytime construction activity are scheduled to occur concurrently at the various components of the Proposed Development. For these cases, a worst-case value has been predicted for each site, assuming all construction activities for concurrent phases are to be carried out simultaneously. These are presented **in Appendix 7G**.

7.13.15 On this worst-case basis, residential receptors at the east end of Downside Road are predicted to experience construction noise levels at the daytime threshold level of 65 dB from the construction works on the gyratory road. A potentially significant effect is therefore predicted from concurrent activity on the gyratory road in the absence of any mitigation.

7.13.16 For the case of the A38 highway improvements, residential receptors in the vicinity of the A38 are already expected to be exposed to construction noise levels greater than 65 dB from individual phases of works. These receptors are predicted to experience construction noise levels of up to 75 dB from concurrent activity on the A38 roadworks site.

7.13.17 Consideration has also been given to the cumulative effects of daytime noise from multiple construction sites where the schedule of works is expected to overlap. Worst-case values have been predicted for these periods, where all construction activities for concurrent phases have been assumed to be carried out simultaneously in a given month. These are presented in in **Appendix 7G**. As resulting levels lie below 65 dB $L_{Aeq,12h}$, no significant effects are predicted due to cumulative noise from multiple construction sites, aside from at those receptors already identified to be close to the A38 roadworks and those close to the new gyratory roadworks.

7.13.18 Where significant effects have been identified, mitigation measures are required to be deployed and these are discussed in **Section 7.16**.

Night-time noise

7.13.19 On an individual site and phase basis, no significant effects from night-time construction noise are expected.

7.13.20 Due to the sequential phasing of activity of the runway construction works, no concurrent activity at individual sites is expected during the night. However, work on the east taxiway link and taxiway widening and fillets sites is provisionally scheduled to be concurrent. In this scenario, if the noisiest phase of activity (earthworks) is assumed to take place at both sites simultaneously in a given hour

then construction levels will remain below the threshold above which any potential significant effects could arise. This is shown in in **Appendix 7G**.

Vibration

7.13.21 Vibration from piling would be expected to attenuate below the criteria for a potential significant effect over the distances (≥170m) to the nearest receptors and therefore **no significant effects** are predicted from piling vibration.

7.13.22 In practice, piling is planned to involve use of a rotary bored piling rig along with the insertion of steel casings using a vibratory technique. These methods produce less vibration than that arising from driven piles which have been assessed above.

7.13.23 In **Appendix 7G** at a distance of 20m, the closest distance between site and receptor for this activity (receptor I during the A38 works), a vibration level of 0.4mms^{-1} PPV would be expected with 50% probability of this value being exceeded. This is equivalent to a vibration level of 0.8mms^{-1} PPV with 33% chance of exceedance or 1.6mms^{-1} PPV with 5% chance of exceedance.

7.13.24 Based on the results for vibratory compaction during the daytime, vibration is most likely to remain below the limit for a possible significant effect to be indicated (1mms^{-1} PPV), although there is a slim chance of levels rising to a potential moderate significant effect but remaining below a potential substantial significant effect. Considering the low probability and context that only a few residential receptors could be affected for a short duration and assuming that Best Practicable Means, including forewarning the few receptors that could be affected, are followed it is not expected that a significant effect would occur due to vibratory compaction during the A38 works.

7.13.25 Vibratory compaction during the night-time, during the east taxiway works and taxiway widening and fillets works, will take place at large distances from the nearest noise sensitive residential receptors. As a result, vibration levels at these receptors are predicted to lie well below the threshold at which any potential significant effects might be expected.

7.14 Assessment of Effects – All noise and vibration sources

Predicted effects and their significance

7.14.1 The assessment of the effects of noise considers each type of source in isolation, such as aircraft air and ground noise, road traffic and construction noise, rather than in combination. The reason for this is that the primary research undertaken into community response and noise considers each noise source separately, not in combination. A summary of the results of the assessment of the noise and vibration from various sources is provided in **Table 7.57**. These are taken from the assessment results in **Section 7.10**, **Section 7.11**, **Section 7.12** and **Section 7.13** and relate to the change from Without to With Proposed Development in 2026. In the case of air noise, the table describes noise effects likely to occur accounting for how conditions might change under 10 mppa between 2021 and 2026.

© Wood Environment & Infrastructure Solutions UK Limited

Table 7.57 Summary of significance of adverse effects

Source	Receptor type and assessment period	Magnitude of change[2]	Significance[3]	Summary rationale
Air Noise	Residential – Day	Negligible	Not significant	A small number of dwellings are exposed to a significant air noise level. Changes due to the development are negligible and therefore not significant.
	Residential – Night	Negligible	Not significant	Although some dwellings are exposed to a significant air noise level, changes due to the development are negligible and therefore not significant.
	Schools	Negligible	Not significant	One school is exposed to a significant air noise level. Changes due to the development are negligible and therefore not significant.
	Places of Worship	Negligible	Not significant	A small number of places of worship are exposed to a significant air noise level. Changes due to the development are negligible and therefore not significant.
	Amenity Areas	Negligible	Not significant	A small number of amenity areas are exposed to a significant air noise level. Changes due to the development are negligible and therefore not significant.
Airborne Aircraft Vibration	Residential	Negligible	Not significant	A very small number of dwellings are exposed to a significant vibration level. This is expected to remain similar or reduce due to the development.
Ground Noise	Residential – Day	Negligible + moderate (beneficial)	Not significant	A very small number of dwellings are exposed to a significant ground noise level. Some dwellings experience moderate reductions in noise due to screening by the new development. Overall, changes due to the development are negligible and therefore not significant.
	Residential – Night	Negligible + moderate (beneficial)	Not significant	A very small number of dwellings are exposed to a significant ground noise level. Some dwellings experience moderate reductions in noise due to screening by the new development. Overall, changes due to the development are negligible and therefore not significant.
	Schools	Negligible	Not significant	No schools are exposed to a significant ground noise level.

© Wood Environment & Infrastructure Solutions UK Limited

Source	Receptor type and assessment period	Magnitude of change[2]	Significance[3]	Summary rationale
	Amenity Areas	N/A	Not significant	No amenity areas are exposed to a significant ground noise level.
Road Traffic Noise	Residential	Negligible	Not significant	A small number of dwellings are exposed to a significant road traffic noise level. Changes due to the development are negligible and therefore not significant.
Construction Noise	Residential	N/A	Not significant	A small number of dwellings are exposed to a significant construction noise level.
Construction Vibration	Residential	N/A	Not significant	No dwellings are exposed to significant construction vibration levels.

1. The sensitivity of receptor is defined using the criteria set out in **Section 7.9** above and is defined as low, medium, high and very high.
2. The magnitude of change on a receptor resulting from activities relating to the development is defined using the criteria set out in **Section 7.9** and is defined as negligible, minor, moderate, substantial and very substantial. The change is shown as adverse unless otherwise stated.
3. The significance of the environmental effects is based on the combination of the sensitivity of a receptor and the magnitude of change and is expressed as major (significant), moderate (probably significant) or minor/negligible (not significant), subject to the evaluation methodology outlined in **Section 7.9**.

7.14.2 From **Table 7.57** it can be seen that there are no receptors subject to significant noise and vibration effects due to any noise or vibration source between the Without Development (10 mppa 2021) and With Development (12 mppa 2026) scenarios, with the exception of construction noise, which is predicted to expose a small number of dwellings to significant levels of noise.

7.15 Consideration of optional additional mitigation or compensation

7.15.1 This assessment has shown that there are no receptors subject to significant operational noise and vibration effects due to the change between the Without Development (10 mppa) and With Development (12 mppa) scenarios. Therefore, no further mitigation is required to reduce the noise and vibration effects that are identified in this ES. However, some receptors are exposed to significant levels of noise and therefore BAL already have in place a number of mitigation measures, one of which is the noise insulation grant scheme. BAL are proposing to enhance this scheme as part of the Proposed Development.

7.15.2 The assessment has found that, with no mitigation, some receptors are likely to be exposed to significant levels of noise during the construction of the Proposed Development. Therefore, a number of measures are set out in the Outline Construction Environmental Management Plan (CEMP), which forms **Appendix 2B**. These measures, described in paragraphs 7.15.14 and 7.15.15, alongside relevant and implementable embedded measures, are considered to be likely to be effective and deliverable and address the potential significant effects of the construction of the Proposed Development.

Enhanced noise insulation grant scheme

7.15.3 As part of the Proposed Development, Bristol Airport are proposing to offer an enhanced noise insulation grant scheme.

7.15.4 In this proposed scheme, the thresholds for insulation will remain as current (refer to paragraph 7.8.25), i.e. daytime 57 dB $L_{Aeq,16h}$ for the 50% grant and 63 dB $L_{Aeq,16h}$ for the 100% grant. It is noted that in all scenarios the night-time 55 dB $L_{Aeq,8h}$ contour is completely enclosed within the daytime 57 dB $L_{Aeq,16h}$ contour. Therefore, people exposed to significant levels of night-time noise will also benefit from the scheme.

7.15.5 The minimum specification of the ventilators that can be installed as part of the scheme will also be improved. These provide a benefit as with sufficient ventilation, residents are not required to open windows and therefore can experience the full acoustic benefit of the glazing.

7.15.6 The grant amount available will increase by 50%, i.e. up to £7,500 for those properties within the 63 dB $L_{Aeq,16h}$ contour and up to £3,750 for those properties within the 60dB & 57 dB $L_{Aeq,16h}$ contour.

7.15.7 For a limited time, all properties within the 57 dB $L_{Aeq,16h}$ contour for the 12 mppa 2026 scenario will be eligible to use the grant amount towards 100% of the cost of works, rather than 50%. This is intended to incentivise uptake in the short-term in order to encourage implementation of mitigation measures prior to BAL reaching 12 mppa by 2026.

7.15.8 BAL will also contact all properties within the forecast eligibility contour to make them aware of the scheme and the offer being provided. Furthermore, BAL will advertise the scheme in the constituencies where the eligibility contour reaches twice a year in order to encourage uptake.

Construction noise and vibration mitigation

7.15.9 The assessment of construction noise effects has shown that daytime construction works in the north-east area of Bristol Airport, specifically the roadworks required for the new gyratory road with internal surface parking may have a significant effect on residential properties located at the east end of Downside Road.

7.15.10 *BS5228-1* suggests that site hoardings may provide a noise reduction from 5 dB, when plant is just visible over the noise barrier, to 10 dB, when the plant is not visible over the noise barrier. On the assumption that a conventional solid timber site hoarding is installed along the northern edge of the gyratory road site, near Downside Road, with a minimum height of 2.4m, then noise at the most affected receptors is predicted to be mitigated to below the threshold for a potentially significant effect to be indicated. This is shown in **Appendix 7G** and will be secured as part of the CEMP (**Appendix 2B**).

7.15.11 Further roadworks constituting the A38 highway improvements also pose a risk to the amenity of residential properties situated close to the road, with noise levels predicted to reach up to 75 dB in the worst-case, where there is concentrated activity on site.

7.15.12 Using the same assumptions for screening as for the gyratory road, temporary barriers surrounding stationary plant such as hand-held road breakers would be predicted to mitigate noise at affected receptors. Further mitigation would be required for those residences directly adjacent to the road due to their close proximity to the works. Additional temporary solid road-side site hoardings to screen these receptors would be predicted to mitigate noise levels below the threshold for a potentially significant effect for these receptors as well. This is shown in **Appendix 7G** and will be secured as part of the CEMP (**Appendix 2B**).

7.15.13 No significant effects are expected to arise from construction vibration and therefore no vibration mitigation will be required.

Recommendations relating to the Outline Construction Environmental Management Plan

7.15.14 Measures to be considered in implementing Best Practicable Means, adopted as part of the CEMP (**Appendix 2B**) will be consistent with the recommendations in BS 5228-1[33], including:

- Project supervision – the Proposed Development will include the designation of a Project Environmental Manager to supervise the implementation of the works;
- Community Relations – keeping local people informed of progress and treating complaints fairly and expediently;
- Site Personnel Training – informing site personnel about the need to minimise noise and advising on the proper use and maintenance of tools and equipment and the positioning of machinery to reduce noise emission to the neighbourhood;
- Site Location – setting noise emission limits with due regard to the proximity of noise sensitive premises;
- Noise Monitoring – to ensure compliance with noise emission limits applicable to relevant items of plant or around the boundary of a site;
- Programme - Details of operations with an indication of the expected duration of each phase and key dates. Local residents may be willing to accept higher levels of noise if they know that the activity causing the noise will only last for a short time; and
- Type of Plant – consideration will be given to using quiet techniques taking account of practical site constraints and best practicable means. Where reasonably practicable, quiet working

methods will be employed, including use of the most suitable plant, reasonable hours of working for noisy operations, and economy and speed of operations.

7.15.15 Many of the work sites relating to the Proposed Development are located at a reasonable distance from the nearest residential receptor and the effects of construction noise and vibration will therefore be negligible. For some sites however, such as for the highway improvements to the A38, some works will take place in close proximity to dwellings. In such cases, it will be particularly important to establish a procedure by which consultation between the contractor and local residents can take place regularly, to keep them informed of progress and steps being taken to protect them from any significant effects of noise and vibration.

7.16 Conclusions of significance evaluation

Air noise and vibration

7.16.1 The Proposed Development will allow a greater number of passenger movements at Bristol Airport compared to the Without Development scenario (approximately 2 mppa beyond current permission).

7.16.2 The number of dwellings exposed to significant levels of aircraft air noise during the daytime period will generally stay the same as now and as for the Without Development scenarios (either 2021 or 2026). This is primarily due to the change in aircraft utilising Bristol Airport, with more modern, quieter types being introduced in the future.

7.16.3 The number of dwellings exposed to significant levels of air noise during the night will increase compared to the 2017 baseline and will be slightly more for the Proposed Development compared to the Without Development scenarios. This is due to an increase in the numbers of aircraft operating at Bristol Airport during the night in the future, and in the Proposed Development compared to the Without Development scenarios.

7.16.4 The change in air noise levels between the Without Development scenarios and the Proposed Development scenario is **negligible** (0 to 2 dB) for all dwellings in both the day and night periods.

7.16.5 Bristol Airport will continue to implement the various current air noise mitigation measures and will provide an enhanced noise insulation grant scheme, which includes all those dwellings exposed to significant levels of air noise as per the 12 mppa with development scenario.

7.16.6 More people will become affected by aircraft noise at night as Bristol Airport continues to grow within its permitted limits, irrespective of whether the Proposed Development goes ahead or not. The Proposed Development will give rise to a **negligible adverse** effect compared to if the Proposed Development does not go ahead and so will have **no significant effect** on the surrounding noise climate.

7.16.7 The number of people exposed to significant levels of vibration due to airborne aircraft in 2017 is very small. This is expected to remain similar or reduce in the future due to the introduction of more modern, quieter aircraft types. No significant effects are expected due to the Proposed Development.

Ground noise

7.16.8 The principle difference between future ground noise levels under the Proposed Development, as compared to those without the Proposed Development, is the change in the distribution of ground noise around the area and therefore the change in the population that will be exposed to ground noise, resulting in increased ground noise levels for some and decreases for others.

7.16.9 There is a small increase in the number of dwellings exposed to the ground noise during the day and night in the future compared to now for both the Proposed Development and Without Development scenarios. In the future, there is an increase of one in the number of dwellings exposed to the ground noise SOAEL if the Proposed Development occurs compared to if it doesn't, and a slight decrease in the number of dwellings exposed to the LOAEL in the daytime for the Proposed Development compared to the Without Development scenarios. In the future with the Proposed Development, some receptors will benefit from the additional screening provided by infrastructure leading to some significant reductions in ground noise. For all other receptors, any changes in ground noise arising from the Proposed Development as compared to Without Development in the future will experience a **negligible** change in noise level of **no significance**.

7.16.10 More people will become affected by ground noise at night as Bristol Airport continues to grow within its permitted limits, irrespective of whether the Proposed Development goes ahead or not. The Proposed Development will give rise to a **negligible adverse effect** compared to if the Proposed Development does not go ahead and so will have **no significant effect** on the surrounding noise climate.

Road traffic noise

7.16.11 The Proposed Development will change the road traffic noise levels around Bristol Airport. There is a small increase in the number of dwellings exposed to road traffic noise in the future compared to 2017 for both the Proposed Development and Without Development scenarios. There is no change in the number of dwellings exposed to road traffic noise if the Proposed Development occurs or not. The Proposed Development will give rise to a **negligible adverse effect** compared to if the Proposed Development does not go ahead, which is **not significant**.

Construction noise and vibration

7.16.12 The construction noise and vibration assessment has been carried out using predictions to a number of representative noise and vibration sensitive receptors. Accounting for the use of best practicable means and some specific mitigation measures, the construction of the Proposed Development will give rise to a **negligible adverse effect** which is **not significant**.

7.16.13 It has been recommended that the Principal Contractor develop and implement a site-specific Construction Noise and Vibration Management and Mitigation Strategy (refer to **Appendix 2B**) covering demolition and new construction. This will ensure that best practicable means are used to mitigate construction noise effects.

7.17 Implementation of environmental measures

7.17.1 **Table 7.58** describes the environmental measures accompanying the Proposed Development and the means by which they will be implemented. Full details of these are given in **Section 7.8**.

Table 7.58 Summary of environmental measures to be implemented – relating to noise and vibration

Environmental measure	Responsibility for implementation	Compliance mechanism	ES section reference
Fixed 57dB $L_{Aeq,\ 16hr}$ summer Air Noise Contour at 12.42 sq km	Bristol Airport	Planning condition[40]	**n/a**
Noise Control Scheme providing noise violation limits and penalties	Bristol Airport	Section 106 Agreement	**n/a**

Environmental measure	Responsibility for implementation	Compliance mechanism	ES section reference
for Air Noise, specification and adoption of noise and track keeping system and associated community engagement			
Fixed Shoulder Period movement limits	Bristol Airport	Planning condition[40]	**n/a**
Air noise – night noise quota count used to restrict night flying	Bristol Airport	Planning condition[40]	**Section 7.8.**
Air noise – enhanced noise insulation grants	Bristol Airport	Section 106 Agreement	**Section 7.8.**
Ground noise – limits on APU use	Bristol Airport	Planning condition[40]	**Section 7.8.**
Air and ground noise – noise abatement procedures	Bristol Airport	Aeronautical Information Package (AIP) for Bristol Airport[44.]	**Section 7.8.**

YOUR LONDON AIRPORT
Gatwick



Gatwick Airport Ltd

Environmental Noise Directive

Noise Action Plan 2019 – 2024

GATWICK AIRPORT ENVIRONMENTAL NOISE DIRECTIVE NOISE ACTION PLAN 2019 – 2024

CONTENTS

SECTION 1 - FOREWORD 4

SECTION 2 - PURPOSE AND SCOPE 5

SECTION 3 - INTRODUCTION 7

SECTION 4 - ABOUT GATWICK AIRPORT 12

SECTION 5 - AVIATION NOISE 15

SECTION 6 – AVIATION POLICY AND REGULATION OVERVIEW 24

SECTION 7 – NOISE MANAGEMENT AT GATWICK AIRPORT 33

SECTION 8 – THE INDEPENDENT REVIEW OF ARRIVALS AND THE NOISE MANAGEMENT BOARD 42

SECTION 9 - CONTROL MEASURES IN PLACE 47

SECTION 10 – EHS & ENVIRONMENTAL RISK MANAGEMENT 49

SECTION 11 - AIRCRAFT NOISE INDUSTRY STAKEHOLDERS 51

SECTION 12 - COMMITTEES ATTENDED REGARDING AIRCRAFT NOISE 53

SECTION 13 – SUSTAINABLE AVIATION 58

SECTION 14 – THE NEED FOR AIRSPACE MODERNISATION 63

SECTION 15 – DETAILS OF CURRENT NOISE ASSISTANCE SCHEMES 65

SECTION 16 - EVALUATING THE NOISE ACTION PLAN 68

SECTION 17 – RESULTS OF THE 2016 NOISE MAPPING 70

SECTION 18 – OUR NOISE ACTION PLAN 73

SECTION 19 – QUANTIFICATION OF THE NOISE ACTION PLAN 95

TABLE OF FIGURES

FIGURE 1: OVERVIEW OF THE NOISE PERFORMANCE CRITERIA FOR ICAO AIRCRAFT CHAPTER 38

FIGURE 2: DEFINED DAY/NIGHT PERIODS IN THE SUMMER AND WINTER 38

FIGURE 3: CHARGES PER ICAO CHAPTER FOR THE SUMMER AND WINTER SEASONS 38

FIGURE 4: THE CHALLENGES IN REDUCING THE NUMBER OF PEOPLE AFFECTED BY AIRCRAFT NOISE FROM THE SA NOISE ROAD-MAP 59

FIGURE 5: SUSTAINABLE AVIATION (SA) NOISE ROAD-MAP 60

FIGURE 6: KEY PERFORMANCE INDICATORS TO EVALUATE THE NOISE ACTION PLAN 68

FIGURE 7: AIRPORT TRAFFIC STATISTICS 69

FIGURE 8: ESTIMATED TOTAL NUMBER OF PEOPLE AND DWELLINGS ABOVE VARIOUS NOISE LEVELS, LDEN 70

FIGURE 9: ESTIMATED TOTAL NUMBER OF PEOPLE AND DWELLINGS ABOVE VARIOUS NOISE LEVELS, LDAY 71

FIGURE 10: ESTIMATED TOTAL NUMBER OF PEOPLE AND DWELLINGS ABOVE VARIOUS NOISE LEVELS, LEVENING 71

FIGURE 11: ESTIMATED TOTAL NUMBER OF PEOPLE AND DWELLINGS ABOVE NOISE LEVELS, LAEQ, 16H 71

FIGURE 12: ESTIMATED TOTAL NUMBER OF PEOPLE AND DWELLINGS ABOVE VARIOUS NOISE LEVELS, LNIGHT 71

FIGURE 13: OUR NOISE ACTION PLAN ACTIONS, IMPACT AREAS, BENEFITS, PERFORMANCE INDICATORS, REPORTING AND TARGETS 73

SECTION 1 - FOREWORD

By Stewart Wingate, Chief Executive Officer



As Gatwick has grown significantly over the past decade and today welcomes more passengers than ever before; over 45 million passengers in 2017 and a record number of air traffic movements. The airport, as part of the UK aviation network, plays a vital role in supporting the local as well as national economy. As one of the largest companies in our region, Gatwick helps businesses to prosper and tourism to flourish, as well as generating employment for 24,000 people on the airport and a further 13,000 in the local economy.

We continue to sustain air passenger growth in line with the government's challenge for airports to optimise the use of existing infrastructure. However, in supporting aviation growth and creating a range of economic and social benefits, we also recognise our responsibility to ensure we deliver a sustainable and considerate airport operation.

The Independent Review of Arrivals, initiated in August 2015, heralded a significant shift in our approach to tackling community concern regarding airspace and aviation noise. A series of recommendations were put to the airport, all of which were accepted.

The establishment of the Noise Management Board as a result of the Review - the membership of which includes a spectrum of industry stakeholders and community representatives - has created a highly effective means of engaging on noise issues relating to aircraft arrivals, departures as well as on the ground. This robust structure of industry stakeholder collaboration, strongly influenced through a process of community engagement, has allowed the evolution of the noise management process to help identify noise issues and develop solutions which are now managed through a more dynamic Noise Management Board Work Plan.

Under the Environmental Noise (England) Regulations 2006, Gatwick Airport Ltd is required to produce a Noise Action Plan, designed to manage noise issues and effects arising from aircraft departing from and arriving at the airport. This is the third version of the END Noise Action Plan containing 58 Action Plan Actions and it continues to align with the S106 Legal Agreement with West Sussex County Council and Crawley Borough Council, the work plan of the Noise Management Board and our Decade of Change Sustainability Strategy.

We continue to deliver on our commitments and obligations relating to sustainable growth, captured in the S106 Legal Agreement, Noise Management Board Work Plan, Decade of Change strategy and this END Noise Action Plan. We remain committed to publicly reporting our performance against these and the effectiveness of our actions to address community concerns.

Gatwick is a national success story and we are proud that we have become a vital part of the country's national infrastructure as we have grown. And we recognise the important part we have to play in the future not only of our local communities but the UK as a whole.

[redacted]

STEWART WINGATE

SECTION 2 - PURPOSE AND SCOPE

The purpose of this Noise Action Plan is to comply with the requirements of the European Union (EU) Environmental Noise Directive 2002/49/EC (END) and associated UK Government Regulations.

The airport operator is deemed the competent authority for drawing up the Action Plan which for Gatwick Airport, is Gatwick Airport Ltd. The final adoption and approval of the noise action plan is undertaken by the Secretary of State for the Department of Food and Rural Affairs (DEFRA).

Government guidance states that noise action plans are designed to manage noise issues and effects arising from aircraft departing from and arriving at the airport, including noise reduction if necessary.

Gatwick Airport Ltd is committed to reducing noise at or around the airport and has significantly increased the level of focus in addressing the challenges arising from aircraft noise over recent years however it continues to remain an area of concern for local communities. While we can't eliminate aircraft noise completely, our goal is to reduce it as much as possible and this document sets out how Gatwick Airport Ltd plans to manage and where possible reduce the impact of aircraft noise.

Responsibilities within the management of noise do not always fall to the airport operator and where responsibility falls to the Department for Transport, air navigation service providers or the Civil Aviation Authority then the airport can seek to recommend or influence changes. The Noise Management Board at Gatwick is an excellent example of where a wide range of key industry experts and stakeholders are gathered with the purpose of reducing the impact of noise on the local community.

Gatwick Airport's first Environmental Noise Directive Noise Action Plan was published in June 2010 and covered the period 2010 - 2015. This action plan was subsequently updated to cover the period 2013 - 2018. This is the third revision to the action plan and has been devised in line with the latest guidance provided to airport operators by DEFRA.

In revising this action plan, the following bodies have been consulted:

- The Gatwick Airport Consultative Committee
- The Noise and Track Monitoring Advisory Group
- West Sussex County Council
- Crawley Borough Council

In addition, the Noise Management Board has been advised of this process. Details of feedback received is included in Annex 9.

SCOPE

Directive 2002/49/EC relates to the assessment and management of environmental noise and is referred to as the Environmental Noise Directive or END. The Environmental Noise (England) Regulations 2006, as amended, transpose this Directive into English law.

The Regulations require that strategic noise maps be produced for the main sources of environmental noise (major roads, major railways, and major airports) and for agglomerations in

England. Strategic noise mapping for Gatwick Airport, in scope of the Regulations was produced by the Environment Research Consultancy Department (ERCD) division of the CAA and completed in 2017, showing the situation in 2016 utilising the L_{den} measurement.

The contours are shown in Annex 3.

Through the action plan actions set out in this plan, we seek to manage aircraft noise from Gatwick's operation. It is important to note that this document only includes actions related to developments for which the airport has been granted planning permission at the time of publication. For the avoidance of doubt, the scope of this noise action plan does not include a mitigation strategy or specific actions to deal with any new infrastructure or significant airspace change. Nor does it deal with any actions or mitigation schemes in the event Gatwick Airport constructs a second runway.

In the event of any changes or proposals that impact this action plan we will review our noise action plan with the bodies referred earlier in this section, and if appropriate, consult on any proposed amendments publicly.

The legal requirement is for Gatwick Airport Ltd to consider noise issues within the 55dB L_{den} and 50dB L_{night} noise contours. These contours take into account aircraft noise during take-off, landing and ground roll stages of flight.

In revising this Noise Action Plan, we continue to give consideration to actions that seek to address the impacts of aircraft noise in areas beyond the specified contours as well as noise created by taxiing aircraft and engine testing carried out within the airport perimeter.

The 2015 Section 106 Legal Agreement with West Sussex County Council and Crawley Borough Council sets a limit of 250 high powered engine tests per six month rolling period before Gatwick Airport Ltd is required to undertake further prescribed actions. The proposed Boeing Hangar, scheduled for operational use in 2019 is not anticipated to result in a significant increase in engine testing due to the nature if the maintenance work to be undertaken, and high powered engine tests are not expected to occur more than once a month, and probably less than that.

This Noise Action Plan also aligns with Gatwick's Sustainability Strategy, the Decade of Change and the Section 106 Legal Agreement with Crawley Borough Council and West Sussex County Council.

Our strategic approach to noise is described later in this document with more details regarding our Decade of Change and S106 Legal Agreements available on our website in the sustainability section at www.gatwickairport.com

The action plan does not include noise from airport construction activities or noise from road and rail traffic associated with the airport.

Action plans for noise associated with major road and rail routes are dealt with separately under government legislation and do not fall within the responsibility of airport operators.

SECTION 3 - INTRODUCTION

Airports bring positive economic and social benefits, as well as environmental impacts. They are important to the economy, providing jobs, encouraging inward investment and boosting local tourism. However airports can also have an impact for those communities that exist around them. Noise remains a significant issue for people living or working close to airports or under flight paths.

Our environmental policy continues to encourage the use of quieter aircraft and to restrict noisier aircraft. As the airport grows, and the frequency and number of flights increase, we know that we must make sure that our policies on controlling noise continue to evolve so they remain appropriate and effective. The Noise Management Board at Gatwick continues to identify innovative new solutions, in partnership with key industry stakeholders and local community groups to control aircraft noise.

At Gatwick Airport, we have a dedicated team whose focus is to continually monitor aircraft operations to ensure compliance with the noise abatement requirements applicable to the airport. Departing aircraft must follow set routes designed, where possible, to avoid flying over densely populated areas. We monitor the noise levels generated by each aircraft as it takes off from the airport. If any aircraft goes over strict noise limits when taking off, the airline must pay a surcharge. We donate these surcharges to the Gatwick Airport Community Trust Fund. Although the average level of noise from departing aircraft is falling over time, the frequency of aircraft movements has increased, we will therefore continue to work closely with airlines and air traffic control to explore opportunities to improve performance even more.

Until recently, noise from aircraft landing has not received the same attention as that from aircraft taking off; the Independent Review of Arrivals commissioned in 2015 has changed this. We have worked with airlines to enhance landing procedures such as the increase in measurement of continuous descent operations from 6,000ft to 7,000ft to control noise as much as possible. We are also looking into ways to distribute aircraft in a fair and equitable manner as they fly towards the final approach in order to provide benefits for the communities around the airport.

The Department for Transport night flying restrictions continues to place tight controls on aircraft noise at night. It limits the total number of flights during the night, and noisiest types of aircraft cannot be used. The most recent night flying restrictions were announced in early 2017 and came into effect for the winter season 2017/2018 and will remain in place until 2022.

Mitigation schemes play an important role in limiting the disturbance caused by aircraft noise. We have offered a noise insulation scheme for many years and between 2014 and 2017, Gatwick Airport Ltd has spent over £3m providing acoustic insulation to homes within our extended scheme boundary.

We continue to provide schemes where we will offer to purchase properties that may be suffering from either a very high level of noise or a large increase in noise. The Home Owner Support Scheme aims to provide financial reassurance for those property owners whose home may be impacted by the construction of a second runway and we also offer a Property Relocation Scheme, which covers the costs of moving house to help residents in the noisiest areas to move to a quieter area. Full details of these schemes are included later in this document within Section 15.

We are committed to developing the ways we share information relating to aircraft noise with others. We continue to make information from our Noise and Track Keeping System available

online through the 'Casper Noise Lab'. We continue to regularly publish our performance against a set of performance indicators and will report on the noise complaints we receive and how we handled them. We regularly report our performance on our website, through the Gatwick Airport Consultative Committee, and by engaging with airlines, pilots and air traffic control through the Flight Operations Performance and Safety Committee, along with local authority representatives through the Noise and Track Monitoring Advisory Group.

Our community noise monitoring programme continues to be well used with noise data from a wide range of areas being analysed by local Environmental Health Officers through the Gatwick Noise Monitoring Group and detailed reports shared with the Noise and Track Monitoring Advisory Group and uploaded to the airport website.

As a designated airport operator, the Department for Transport (DfT) has direct control over noise policy at Gatwick Airport and has established over many years a range of operational controls and statutory objectives to manage and where possible reduce noise. Limiting and, where possible, reducing the impact of noise is a long-standing commitment of Gatwick Airport and is critical to maintaining the airport's licence to operate and grow.

Gatwick Airport has had in place for a number of years a detailed noise strategy and a comprehensive and effective approach to aircraft noise management. This is further supported by our Decade of Change strategy as well as our S106 Legal Agreement with West Sussex County Council and Crawley Borough Council which lays the foundations of our Noise Action Plan.

Gatwick Airport is, as defined by the Environmental Noise (England) Regulations 2006, as amended, a major airport and consequently must produce noise maps and publish a Noise Action Plan every five years. These five yearly cycles of noise mapping are referred to as 'Rounds' and this Noise Action Plan is produced in response to the latest 'Round 3' noise mapping exercise.

Noise Action Plans are designed with the aim of 'preventing and reducing environmental noise where necessary', and the Department for Environment, Food and Rural Affairs (DEFRA) has issued guidance to help airport operators prepare their plans.

Under the regulations we must assess, and provide information on, how effectively we are controlling the effect of noise arising from aircraft landing and taking off. We must provide information on our performance in noise maps, together with the numbers of people and homes exposed to a range of noise levels

The Environmental Noise (England) Regulations 2006 align with the Government's aim – as set out in the Aviation Policy Framework – to adopt a balanced approach to securing the benefits of aviation. This is underpinned by two core principles:

- Collaboration: By working together with industry, regulators, experts, local communities and others at all levels, the industry will be better able to identify workable solutions to the challenges and share the benefits of aviation in a fairer way than in the past.
- Transparency: To facilitate improved collaboration, it is crucial to have clear and independent information and processes in place. Those involved in and affected by aviation need to have a clearer understanding of the facts and the confidence that proportionate action will be taken at the international, national or local level.

Government policy is to strike a fair balance between the negative impacts of noise (on health, amenity (quality of life) and productivity) and the positive economic impacts of flights. As a general principle, the Government therefore expects that future growth in aviation should ensure that

benefits are shared between the aviation industry and local communities. This means that the industry must continue to reduce and mitigate noise as airport capacity grows. As noise levels fall with technology improvements the aviation industry should be expected to share the benefits from these improvements.

In July 2017, the Department for Environment, Food & Rural Affairs (DEFRA) provided amended guidance to airport operators in respect of the production of noise action plans under the terms of the Environmental Noise (England) Regulations. Existing action plans are to be revised taking into account the updated noise mapping, airport specific operational changes, new actions that may influence aircraft noise and progress against actions within the current action plan.

The guidance states that the airport operator will present their revised action plan to the airport consultative committee and any other appropriate organisation for comment after which the airport operator will reflect on them and include them in the revised plan together with a response to the issues raised.

This document aims to:

- Demonstrate our continuing commitment to managing aircraft noise impacts associated with Gatwick Airport's operations. We have identified this issue as one of our key sustainability priorities
- Allow us to engage with communities affected by aircraft noise and better understand their concerns and priorities, so that we can ensure our airport noise strategies and action plans are well informed
- Enable us to make progress towards our long-term statutory and voluntary aircraft noise objectives
- Enable us, in our role as the competent authority for Gatwick Airport, to meet the requirements of the Environmental Noise Directive 2002/49/EC and The Environmental Noise (England) Regulations 2006.

Over the following paragraphs we have set out the key aspects of sections 3–19 of this Noise Action Plan. There are also a series of Annexes contained within this document including a glossary of terms (Annex 1).

Section 2 sets out the purpose and scope of the noise action plan. The scope extends beyond the areas identified by the strategic noise mapping to include ground noise issues and actions that impact on areas outside the contours. The section also points out that responsibilities for noise management do not always fall to the airport operator and often fall to the Department for Transport, NATS and/or the Civil Aviation Authority. In such cases the airport operator can only recommend any proposed changes.

Section 4 provides a description of Gatwick Airport and comments briefly on future development of the airport.

Section 5 introduces the issue of aircraft noise and acknowledges that noise contours are not the only way to describe the community impacts of aircraft noise. This section details the Attitude to Noise from Aviation Sources in England (ANASE) study conducted on behalf of the DfT; Survey of Noise Attitudes (SoNA) 2014 commissioned by the UK Government.

These studies, some of the early feedback we received during our initial pre-consultation stakeholder meetings and analysis of our complaints data has shown that the frequency of overflight, night flying and our role in influencing associated stakeholders are all key local concerns for community stakeholders.

The interdependencies between noise and air emissions to ensure compatibility between action plans are also briefly discussed. The legal context within which Gatwick Airport operates is complex. The International Civil Aviation Organisation (ICAO) sets international noise certification standards and recommended practices and procedures in relation to aircraft noise. Reference is also made to the requirement for member states to adopt a 'balanced approach' to noise management.

Section 6 provides a detailed overview of aviation policy and what it means for Gatwick. This includes International, European and Domestic policy.

At the European level some detail is provided on key European Union Directives which relate to aircraft noise including the phasing out of older Chapter 2 aircraft in 2002. At a national level a number of significant Acts of Parliament and regulations are set out. These include the Civil Aviation Acts 1982 and 2006 which grant the government powers to introduce noise control measures at designated airports (Gatwick is a designated airport). This section also introduces the UK Aeronautical Information Package (UK AIP) which contains a range of noise controls relating directly to aircraft operations.

Section 7 outlines our strategic approach to aircraft noise management framed around our long-term objective 'to gain the trust of our stakeholders, that we are using best practicable means to minimise aircraft noise impacts'.

This noise action plan sets out the themes to our noise work programme which are:

1. Reducing noise impacts wherever practicable. This includes:

- **a. Quietest fleet practicable**
- **b. Quietest practicable aircraft operations, balanced against NO_X and CO_2 emissions**
- **c. Effective and credible noise mitigation schemes**

2. Engaging with communities affected by noise impacts to better understand their concerns and priorities, reflecting them as far as possible in airport noise strategies and communication plans

3. Influencing planning policy to minimise the number of noise sensitive properties around our airport

4. Organising ourselves to continue to manage noise efficiently and effectively

5. Continuing to build our understanding of aircraft noise to further inform our priorities, strategies and targets.

We also describe the current measures in place to manage noise at Gatwick Airport. In headline terms these include:

- Noise and track keeping monitoring arrangements
- Operating restrictions
- Runway use
- Night flight restrictions
- Operational procedures
- Departure procedures
- Noise Preferential Routes (NPRs)
- 1,000ft rule
- Arrival procedures
- Continuous Descent Operations (CDO or otherwise known as Continuous Descent Approach (CDA))
- Instrument Landing System (ILS) joining point rules
- Reverse thrust
- Noise limits
- Ground noise controls
- Aeronautical charging
- Noise mitigation and compensation schemes
- Stakeholder engagement.

Section 8 details the Independent Review of Arrivals and the establishment of the Noise Management Board, itself a step change in noise management at Gatwick since the last iteration of this Noise Action Plan.

Sections 9 and 10 cover the Control Measures in place at Gatwick and our Environmental Risk Management strategy respectively. Whilst Section 12 provides an overview of the various committees that are in existence relating to aircraft noise management, this has been included in this version of the Noise Action Plan to provide more transparency as to 'who does what' given the frequency certain committees are referenced in this document.

Section 14 explains the need for airspace modernisation. While this is a contentious issue in certain communities, the fact remains the present airspace structures are ageing and inefficient. Optimisation of the airspace will provide capacity, resilience and environmental benefits due to aircraft being able to operate more efficiently.

Section 17 summarises the results of the 2016 noise mapping and is supported by the maps in Annex 3. Although the mapping introduces a relatively new metric to describe the noise impact, Gatwick Airport's strong history of noise management controls and frequent contour analysis means it does not highlight any new geographical areas of concern with regard to noise impacts.

Section 18 is the list of actions. There are 58 actions detailed within this Noise Action Plan.

Performance against our Action Plan Actions will be reported quarterly to the Noise and Track Monitoring Advisory Group, annually to the Gatwick Airport Consultative Committee as well as referenced in our Flight Performance, Section 106 and Decade of Change report.

SECTION 4 - ABOUT GATWICK AIRPORT

Gatwick became an aerodrome in the 1930s, but the airport today opened in 1958 with just 186,000 passengers passing through the airport in our first year of operation. Today, it's a different story. Gatwick Airport is open 24 hours a day, 365 days a year, and we now help take more than 45 million passengers to 228 destinations in 74 countries around the world every year.

The airport is located approximately 28 miles south of London and about 2 miles north of Crawley. Aside from the nearby towns of Crawley and Horley, it is situated in mostly lightly populated countryside. The airport has one main runway, designated 08R/26L, which is 3,316 metres long. The Runway 26L threshold is displaced by 424 metres, and the Runway 08R threshold is displaced by 393 metres. There is also one standby runway (08L/26R) that can be used if the main runway is out of operation.

Gatwick operates the world's most efficient single runway and is the second largest airport in the UK. Uniquely, it is home to a mix of airline operators from scheduled to low-cost and charter airlines. Fifty-three airlines currently operate (as of December 2016) regularly from the airport including easyJet, British Airways, Norwegian, Virgin Atlantic, Emirates, Cathay Pacific, Thomas Cook, Thomson, Turkish Airlines, Air Transat, Vueling, Iberia Express, Ryanair, Air Lingus, Aurigny, Air Canada Rouge and WestJet.

The Airport is the biggest base for easyJet, one of Europe's most successful airlines, and it's also home to key charter operations such as Thomson and Thomas Cook. It is also the airport with most connections to and from other UK regions, with significant numbers of passengers travelling on easyJet, British Airways, Flybe, and Aurigny.

In addition to the major long haul leisure operations of British Airways and Virgin, Gatwick is now seeing the emergence of long haul services to the Far East, with the arrival of Turkish Airlines, Cathay Pacific and Tianjin Airways. These complement the existing long haul services provided by airlines such as Emirates, WestJet, and Norwegian.

The consortium that ultimately owns the Airport currently comprises the following parties:

Global Infrastructure Partners, LP ("GIP 1") 41.95%
The Abu Dhabi Investment Authority ("ADIA") 15.90%
The California Public Employees' Retirement System ("CalPERS") 12.78%
National Pension Service of Korea ("NPS") 12.14%
Future Fund Board of Guardians ("Future Fund") 17.23%

The strategy for the Airport is to transform the passenger experience and improve efficiency for the airlines and the Airport itself, thereby improving its competitiveness in the London airport market. A key element of Gatwick's strategy is to build and maintain strong relationships with its airline customers, regulators and other stakeholders.

Gatwick has set out its ambition – compete to grow and become London's airport of choice, and has established six strategic priorities to which its activities are aligned.

The strategic priorities and the approach Gatwick is taking to achieve them have been outlined below:

- Deliver the best passenger experience: by listening to its passengers and delivering the kind of service that will make them choose to fly from Gatwick;
- Help its airlines grow: by understanding airlines' goals and developing commercial partnerships;
- Increase value and efficiency: by maximising income, lowering its operating costs and driving capital efficiency;
- Protect and enhance its reputation: by building strong and constructive relationships with its stakeholders based on openness and trust;
- Build a strong environment, health and safety ("EH&S") culture: by maintaining a relentless focus on achieving zero incidents; and
- Develop the best people, processes and technology: by investing in high-performing people, continuous improvement and deploying the right systems.

2017 – 2022 CAPITAL INVESTMENT PLAN

Whilst the airport continues to expand, Gatwick recognises that to improve continually the quality of service which passengers have come to expect requires ambitious investment plans keep pace with rising demand. The 2017 Capital Investment Programme sets out Gatwick's plans to invest £1.15 billion over the next five years through to 2022, with £240 million planned for 2017/18 alone. The airport has continued to invest to improve facilities since it changed ownership in December 2009, and has invested £1.5 billion to date.

One area where the airport is putting more emphasis are projects to enhance the efficiency of the airfield, by optimising infrastructure, to help its airlines operate on time. Gatwick also plans to commence the resurfacing of the main runway during this five year period to protect its most valuable asset. Other projects that are being accelerated to meet the airport's growing demands are the expansion to the North Terminal Border facilities and a suite of IT projects supporting core airport functions. Gatwick continues to develop its plans for expanding the International Departures Lounges in both terminals, for providing additional car parking capacity, and for improving the roads in the vicinity of the airport.

Over the last three years, passengers have benefited from Gatwick's North Terminal Development Programme which has vastly improved the terminal's landside areas; providing check-in and bag drop automation, more efficient security processing and a much more welcoming arrivals concourse. Automation was a key component of this programme, and the airport plans to build on the success it has seen in North Terminal by extending the roll-out of self-service bag drop to South Terminal. Gatwick will also start a programme to automate boarding in gaterooms to make the embarkation process more efficient for passengers and airlines.

As always, Gatwick is committed to maintaining its existing assets, as well as continuing its programme of resilience measures, to ensure passengers consistently receive the best experience possible during their journey through the airport.

One of Gatwick's biggest achievements has been the successful consolidation of easyJet's operations into the North Terminal in late January 2017, simplifying the journey for millions of its passengers. As part of this consolidation British Airways moved to the South Terminal, whilst Virgin Atlantic Airways moved to the North Terminal. It took several years of planning to make this happen, and a wide ranging suite of infrastructure changes; not only the more obvious front-of-house switches of check-in areas, passenger lounges, baggage reclaim and security facilities, but also changes to the behind-the-scenes facilities that are so critical to a successful airport operation

such as airlines' crew and engineering facilities. In the process of making these changes, many improvements to passenger-facing facilities have also been undertaken.

On 1 June 2016 Gatwick opened the new Pier 1, which provided five new aircraft stands with light, bright, modern gaterooms. The building is also home to a brand new departures baggage facility, serving the whole South Terminal, which provides airlines and passengers with greater check-in and baggage processing capacity and flexibility, including allowing passengers to check-in earlier than before.

BOEING HANGAR

Planning permission was granted in October 2017 for the construction of the £88 million Boeing Hangar at Gatwick. Boeing expects construction to start at the facility in late 2017, for an early 2019 opening. Building the facility is expected to support 475 jobs and contribute around £80m of gross value added to the local economy around the airport. Over the first two decades of operation the hangar's activities will generate a further £135m in GVA in the Gatwick area. This development will build on the long term partnership between Boeing and the UK Government, announced at the Farnborough International Airshow in July 2016 and the ground breaking for Boeing's first factory in Europe, to be built outside Sheffield, South Yorkshire and twinned with a facility in Portland, Oregon.

TRANSPORT FACTS

- Gatwick was the world's first airport to have a direct mainline train link with a dedicated railway station
- Gatwick is already the UK's best connected airport by rail and directly connects to more stations than any other European airport
- Number of direct rail connections: more than 129
- Time by rail to central London: 30 mins

FACILITIES

- Number of runways: 1
- Runway length: 3,316m long by 45m wide
- Number of terminals: 2 - South (opened in 1958) and North (opened in 1988)
- South Terminal is 160,000 square metres of which 14,768 square metres is retail facilities
- North Terminal is 98,000 square metres of which 12,530 square metres is retail facilities
- There are 143 stands in total at Gatwick Airport:
- 71 pier served stands split roughly 50:50 between each terminal
- 72 remote stands serviced by coaches
- 346 check-in desks. 187 in South Terminal and 159 in North Terminal. In addition, there are 69 self-service kiosks

WORKFORCE AND ECONOMY

- Around 24,000 staff work on the Gatwick campus across 252 different companies, the airport also creates a further 12,000 jobs indirectly and directly generates £1.6 billion for the UK economy
- Gatwick Airport itself employs around 2,800 people directly of which 1,800 are security staff
- 25% of all staff working at the airport are cabin crew

SECTION 5 - AVIATION NOISE

Aviation noise is unwanted sound generated by aircraft, and it is a serious and growing problem in the UK. As airports expand and air services increase, more and more homes are exposed for large parts of the day to a persistent background noise from aircraft.

Noise from aircraft is subject to an entirely different regulatory regime to other noise pollution. The Civil Aviation Act 1982 (updated in 2006) provides that no action for trespass or nuisance can be taken as long as an aircraft observes the rules of the Air and Air Traffic Control Regulations, which also cover ground movements.

The UK's main measure of aviation noise is Equivalent Continuous Sound Level (L_{eq} dB(A)). This averages the sound energy monitored from all aircraft noise events in a certain area over a 16 hour period each day (0700 and 2300). The UK government defines three community annoyance thresholds of low annoyance at 57 L_{eq}, medium annoyance at 63 L_{eq} and high annoyance at 69 L_{eq}.

The government published their Response to their Airspace Consultation in 2017 and acknowledged the evidence from the SoNA study, which showed that sensitivity to aircraft noise has increased, with the same percentage of people reporting to be highly annoyed at a level of 54 dB $L_{Aeq, 16hr}$ as occurred at 57 dB $L_{Aeq, 16hr}$ in the past.

BACKGROUND

The Air Navigation Act 1920 provided the basis of the UK's aviation noise regulation regime, by exempting aviation from nuisance sanctions, in order to stimulate the nascent industry.

This principle was reaffirmed in the Civil Aviation Act 1982, which nonetheless set out a number of provisions for controlling noise at larger airports through a process of "designation", which has only been applied to date to Heathrow, Gatwick and Stansted. By their Section 78 designation, the Transport Secretary is responsible for regulating take-off and landing noise at these airports.

In practice, noise restrictions at designated airports have been implemented through restrictions on departing aircraft noise, controls on night flying and (at Heathrow and Gatwick, under Section 79) housing noise insulation schemes.

At other airports, the successive governments have continued to favour local resolution. Councils' main instrument in this regard is the Section 106 Obligation, a condition that can be placed on planning permission.

Aviation is necessarily an international business, making unilateral domestic regulation difficult. However, successive agreements of the International Civil Aviation Organisation (ICAO) have sought to impose controls on aircraft design in order to minimise noise pollution.

Since the 1960s, jet engines have become four times quieter. A process of driving up noise pollution standards has been pursued by the ICAO, and by the European Civil Aviation Conference.

In 2001, the ICAO Assembly agreed that a balance of at-source restrictions, planning controls, operating restrictions and noise abatement practices by pilots and air traffic controllers would form the appropriate methods to address aviation noise.

In 2002, "Chapter 2" aircraft were outlawed from the EU, and the new "Chapter 4" came into force in January 2006, which improved upon the current "Chapter 3" standard by a cumulative 10 dB(A). The majority of aircraft in service today already meet the Chapter 4 requirements with an ever increasing number qualifying for Chapter 14 status[1]. This was agreed in 2013 and represents the latest requirements for all aircraft certified on, or after 31st December 2017 or 31st December 2017 for aircraft under 55 tonnes.

Night flights are a particularly controversial aspect of aviation noise. Studies have shown that sleep can be disturbed at a relatively low L_{eq} level of just 30. The first restrictions on night flights were imposed at Heathrow in 1962. Reviews have taken place since then in 1988, 1993 and 1998 and ten airports are now subject to night noise controls under the Aerodromes (Noise Restrictions) (Rules and Procedures) Regulations 2003.

The Government undertook to consult on a new night noise regime in 2004, and decided that the existing limits on night flights should remain until 2012. This was extended again until 2017 with a new regime coming into effect thereafter following a consultation process.

AIRCRAFT NOISE

For the large majority of commercial jets, the primary noise source is the engines. The secondary one originates in the airflow around the aircraft (aerodynamic source).

ENGINE NOISE - JET

The jet noise is linked to the intense exhaustion of the burnt gases at high temperature. Downstream of the aeroplane wings, the jet generates strong turbulence as it enters a still area (relatively to the jet speed).

The main characteristics of this noise are the following:

- The generation area is located rear of the engines, at a distance equivalent to a few nozzle diameters.
- The noise directivity is strong, heading for the back of the aircraft.
- The noise generated does not contain remarkable tones, and its frequency band is quite wide.

ENGINE NOISE - FAN

The noise produced by the fan results of the superimposition of a wide-band noise (as for the jet) and noise with harmonics.

- The wide band noise is due to the boundary layer developing on the fan blades, and more generally to the airflow around them.
- The harmonics are originating in the intrinsic cycling character of the fan motion (spinning motion). The most remarkable frequency is the fundamental, the value of which is the number of blades times the fan rotation speed. The harmonics are multiples of this fundamental.
- When the engine rating is high (during take-off for instance), the airflow around the fan blades transitions to supersonic and these multiple pure tones are at the origin of the so-called “buzz saw noise”.

[1] In 2017, 39% of aircraft movements at Gatwick were billed at the Chapter 14 noise standard. Of these, 63% were in the quietest noise categories, Chapter 14 Base and Chapter 14 Minus

ENGINE NOISE - COMPRESSOR

It is of the same kind than the fan noise, but the harmonics are less emergent due to interaction phenomena.

AIRFRAME NOISE

The airframe noise would be the noise produced by the aircraft, if all engines were made inoperative. It is generated by the airflow surrounding the moving plane. The main sources are the discontinuities of the aircraft structure, such as high-lift devices (flaps and slats), landing gear wheels (when extended), trailing edges where there is a speed shearing (aircraft speed versus still air).

It was empirically determined that the noise emissions are dependent on the sixth power of the aircraft's true airspeed. This noise produced from aerodynamic phenomena is most sensitive during approach, when engine power is the lowest.

AIRCRAFT NOISE AROUND AIRPORTS

The community noise does not only include the aircraft emissions but also other sources, such as road traffic. Actually the airport-side residents are also exposed to these other sources, the noise of which may be higher than the one produced by the aircraft, at least in terms of equivalent acoustic energy.

The noise produced by aeroplanes was not really a major issue before the early 1960's, when the traffic of jet-planes started to grow. Nowadays, it can be considered as the most obvious kind of pollution due to aircraft operations. Nonetheless, one must acknowledge that the noise perception (and especially for aircraft) is very subjective and depends on the sensitivity to noise of each person. This is the reason why even though the global amount of aircraft noise energy has decreased, in the meanwhile the feeling of disturbance has increased.

Aircraft manufactured today are much quieter than they were 20 years ago and these will be replaced by even quieter aircraft in the future. But, even though each individual aircraft is quieter, there are more aircraft flying now than previously. This means that the average level of noise is lower than before, but the frequency of aircraft movements and hence noise 'events' has increased.

AIRCRAFT NOISE MEASUREMENT

In the UK, daytime aircraft noise is measured by calculating the average noise level in decibels (dB) over 16 hours, to give a single daily figure. The UK Government calls this average decibel measurement 'L_{Aeq}' (which is often shortened to L_{eq}). It means 'equivalent continuous noise level' and is the most common international measure of aircraft noise. The UK Government says that communities become significantly annoyed by aircraft noise above 57dB L_{Aeq}. They use this as the starting point when setting policy on aircraft noise.

In the last 15 years, the number of people affected by noise within Gatwick's 57dB(A) 16 hour L_{eq} daytime noise contour has fallen from 14,500 people in 1996 to 3,650 in 2012. This has been achieved despite a significant growth in air traffic movements per annum from around 220,000 in 2006 to 240,000 flights in 2012. In 2016, the number of people in this contour increased to 4,150. However, looking holistically over the same period the total number of people in this contour has fallen by 70% since 1996 whilst the airport has grown to serve a total of 281,000 aircraft movements and 44.1 million passengers in 2016.

INTERDEPENDENCIES - NOISE AND EMISSIONS TO AIR

There are interdependencies between the emissions of local air pollutants and carbon dioxide (CO_2) from aircraft engines, which affect aircraft noise management strategies. Most of the technological advances in aircraft design in the last 20 years have led to both a reduction in noise and CO_2 emissions, but in some cases have resulted in an increase in emissions of local air pollutants such as oxides of nitrogen (NO_x). The challenge for the aviation industry is to address these three issues simultaneously.

Operational controls also need to be balanced. For example, the adoption of a reduced thrust setting for an aircraft during take-off can reduce NO_x emissions by up to 30% or more compared to a full thrust setting. Many airlines already employ 'reduced thrust' as their standard operating procedure. While this is beneficial in the immediate vicinity of the airport, there can be a small increase in the noise experienced by those further away under the departure flight path as the aircraft decreases its angle of ascent.

Gatwick Airport has long been aware of the interdependencies between noise, local air quality and CO_2 emissions and has undertaken a number of studies to help quantify the exact balance that needs to be struck for specific situations. The level of understanding of this interdependency external to the aviation community is not complete, and Gatwick Airport aims to promote further engagement.

EFFECTS OF NOISE

There are many different effects and sources of noise, and individuals experience each of them to different degrees. The effects can include general distraction, speech interference and sleep disturbance. Sometimes these effects can lead to annoyance and complaints. Research into the potential health effects of noise produces varying outcomes. More recently research published in the British Medical Journal in October 2013 states that the exact role that noise exposure may play in ill health is not well established. However, it is plausible that it might be contributing - for example, by raising blood pressure or by disturbing people's sleep. There's a 'startle reaction' to loud noise - if you're suddenly exposed to it, the heart rate and blood pressure increase. And aircraft noise can be annoying for some people, which can also affect their blood pressure, leading to illness. (Dr A Hansell, Imperial College London).

The possibility that severe annoyance might induce stress cannot be ignored. The Government's Aviation Policy Framework aims is to limit and where possible reduce the number of people in the UK significantly affected by aircraft noise as part of a policy of sharing benefits of noise reduction with industry. This is consistent with the Government's Noise Policy, as set out in the Noise Policy Statement for England (NPSE) 93 which aims to avoid significant adverse impacts on health and quality of life.

ANNOYANCE

Extracted from the Civil Aviation Authority publication 'CAP 1588 - Aircraft Noise and Annoyance: Recent findings'.

The ever-increasing demand for regular and convenient road, rail and aircraft transportation consequently brings with it an increase in environmental noise and subsequent effects.

The most widespread and well documented subjective response to noise is annoyance; which can be defined as a feeling of resentment, displeasure, discomfort, dissatisfaction or offence which occurs when noise interferes with thoughts, feelings or activities. The annoyance of populations exposed to aircraft noise varies not only with the acoustical characteristics of the noise, but also with a range of non-acoustical factors of social, psychological or economic nature.

Transportation noise, amongst other noise sources such as that from construction, was brought to people's attention in 1963, via a report entitled "*Noise*", written by the Committee on the Problem of Noise, and commonly referred to as the "Wilson Report" after Sir Alan Wilson, Chairman of the committee. The Wilson Report stated that solving "noise problems must involve people and their feelings, and its assessment is a matter rather of human values and environments than of precise physical measurement". The issues raised in the Wilson Report are still, if not more, relevant today with an increasing demand for travel, 24-hour society and requirements for transport links.

Annoyance is considered to be a detriment to quality of life, well-being and ultimately, health. The Word Health Organisation's (WHO) definition of health is: *"Health is a state of complete physical, mental and social well-being, and not merely an absence of disease and infirmity."* Annoyance from any source therefore represents a diminished state of well-being.

In order to provide public protection from aircraft noise, an 'annoyance threshold' currently exists within UK policy. The time period for noise exposure used is an average summer day, from June 16th to September 15th and from 7am to 11pm. The Wilson report originally recommended the use of summer days (7am – 7pm) due to the increased likelihood of more people being outdoors and having windows open, and also because aviation levels are at their highest during summer months. The 1982 *Aircraft Noise Index Study (ANIS)*, the outcomes of which were adopted in policy in 1990, extended the reference day period from 7am to 11pm to reflect that there is a difference in terms of daytime and night-time noise exposure and consequently, annoyance reactions, resulting in the need for distinctive daytime and night-time noise exposure metrics. The noise exposure metric $L_{Aeq,\ 16h}$, was adopted in 1990 on the basis of the ANIS findings. The UK government defined three thresholds for policy consideration: 57, 63 and 69 dB $L_{Aeq,\ 16h}$, representing low, moderate, and high annoyance levels.

The 2003 Air Transport White Paper subsequently defined 57dB $L_{Aeq,\ 16h}$ as marking the approximate onset of significant community annoyance, and this was reaffirmed in the Government's 2013 Aviation Policy Framework. Critics argue that attitudes have changed since the 1982 survey. This could be because of general shifts in attitudes to annoyance, changes in the pattern of aircraft noise experienced, and/or because of changes to lifestyle that are affected by aircraft noise. This ultimately led to the UK government commissioning the *Survey of Noise Attitudes (SoNA) 2014: Aircraft stud*y.

The government published their Response to their Airspace Consultation in 2017 and acknowledged the evidence from the SoNA study, which showed that sensitivity to aircraft noise has increased, with the same percentage of people reporting to be highly annoyed at a level of 54 dB $L_{Aeq,\ 16hr}$ as occurred at 57 dB $L_{Aeq,\ 16hr}$ in the past.

Taking account of this and other evidence on the link between exposure to noise from all sources and chronic health outcomes, the government decided to adopt the risk based approach proposed in their consultation, so that airspace decisions are made in line with the latest evidence and consistent with current guidance from the World Heath Organisation (WHO).

In 2010 the Department for Environment, Food and Rural Affairs (DEFRA) released the *Noise Policy Statement for England (*NPSE), which aimed to provide clarity on noise and set out the government's long-term vision of noise policy for all noise sources. The noise policy vision was to "promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development."

The NPSE aims, through the effective management and control of environmental, neighbour and neighbourhood noise within the context of government policy on sustainable development:

- avoid significant adverse impacts on health and quality of life;
- mitigate and minimise adverse impacts on health and quality of life; and
- where possible, contribute to the improvement of health and quality of life.

The phrases "Significant adverse" and "adverse" refer to the two established concepts that are applied to noise impacts worldwide, namely:

NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected. Extending these concepts for the purpose of the NPSE leads to the concept of a significant observed adverse effect level.

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur. It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. SOAEL is therefore not specifically defined in the NPSE, for flexibility purposes in the future, with the addition of more research findings.

Annoyance from aircraft noise is a global issue, not just confined to the UK. In 2011, the WHO Europe and the Joint Research Centre published the report: *Burden of Disease from Environmental Noise.* The aim of this report was to provide technical support to policymakers in the form of quantitative risk assessment of environmental noise, using the evidence available in Europe.

For each noise-induced outcome, the report estimated the number of life years that are affected by noise, defined as Disability Adjusted Life Years (DALYs). DALYs are the sum of the potential years of life lost due to premature death and the equivalent years of "healthy" life lost by virtue of being in states of poor health or disability. The outcomes included were ischemic heart disease, cognitive impairment of children, sleep disturbance, tinnitus and annoyance. It was estimated that 654,000 years were lost annually due to annoyance in the EU Member States, and other western European countries (from combined noise sources, but predominantly road traffic noise). This was only exceeded by those lost due to sleep disturbance annually, which were calculated as 903,000 years.

All transportation noise sources result in a degree of annoyance, and this remains a growing concern, particularly with the possible links to other health endpoints. This report will focus on aircraft noise-induced annoyance. Annoyance from aircraft noise and other transportation sources is often studied as part of complex pathways which may exist between acute and chronic health effects such as cardiovascular disease, disturbed sleep patterns with subsequent next-day effects, and even the cognitive performance and learning aspects in children, as detailed in the Burden of Disease Report.

The much anticipated update to the 1999 WHO Community Noise Guidelines is currently being developed, and it is expected that this document will be published in 2018.

CIVIL AVIATION AUTHORITY LITERATURE REVIEW

The United Kingdom Civil Aviation Authority (CAA), at the request of the Department for Transport has undertaken a literature review on the effects of night time aircraft noise on local residents. The CAA's review concluded that:

- It is possible to estimate the proportion of the population who are likely to self-report being highly sleep disturbed for a given noise exposure. Chronic sleep disturbance is regarded as a health effect in its own right with a measurable impact on quality of life, which can be expressed as Years Lost due to Disability (YLD).
- For impacts on cardiovascular health, there is evidence that noise exposure above 55 dB L_{night} results in increased risk of myocardial infarctions (heart attacks).
- There is evidence for a correlation between noise exposure and hypertension and there is sufficient evidence in order to value the impacts in terms of hypertension leading to a stroke or dementia.
- For stress and mental health effects, the evidence is inconclusive or limited, showing a possible correlation between noise exposure and mental health symptoms (e.g. depression, anxiety) but not problems such as clinically defined psychiatric disorder.
- For next day effects, there is some evidence to suggest that environmental (night) noise has scientific evidence of chronic objective effects on stress hormone levels, immune system or performance the next day.
- In relation to the impact on children, the evidence is inconclusive. There is a growing amount of research that noise exposure has effects on cognitive development (particularly on reading) and chronic noise may affect children's stress levels, blood pressure and mental health. There is evidence to suggest that aircraft noise may be associated with poorer reading comprehension and recognition memory. However, it is unclear whether the effects are attributable to daytime or night time noise, and there is no evidence for long-term persistent effects on cognitive development.

Following their literature review, the CAA developed a methodology paper, which proposes how the following health impacts associated with aircraft night noise may be quantified and monetised as part of an appraisal:

- Sleep disturbance;
- The increased risk of myocardial infarctions (heart attacks); and
- The increased incidence of hypertension (including secondary effects of stroke and dementia).

The CAA have recently published a new paper, 'Aircraft noise and health effects: Recent findings' which examines evidence on the relationship between aircraft noise and health that has been published since 2009. The report concludes that with regards to night noise and sleep disturbance, there is growing recognition that average indicators, such as L_{night}, are insufficient to fully predict sleep disturbance and sleep quality.

AIRCRAFT NOISE EFFECTS ON HEALTH

As part of the Airports Commission, specific research on aircraft noise was prepared by Dr Charlotte Clarke of the Queen Mary University of London. The study investigated the health effects of environmental noise on cardiovascular health, sleep disturbance, annoyance, psychological well-being, and effects on children's cognition and learning. Although the study was not an exhaustive review it summarised the strength of the evidence for aircraft noise effects as well as briefly discussing guidelines for environment noise exposure.

ANASE (ATTITUDES TO NOISE FROM AVIATION SOURCES IN ENGLAND)

ANASE was a social study commissioned by the Department for Transport in 2002 aimed at reassessing people's attitudes to aircraft noise, reassessing L_{Aeq} as a measure of annoyance and determining the financial value of noise. The final report was published in 2007, together with the comments of peer reviewers.

The expert peer reviewers advised the DfT that reliance on the detailed outcome of the ANASE study would be misplaced and specifically counselled against using the detailed results and conclusions in the development of Government policy. As a result, the Government stated that they did not propose to use the detailed results from ANASE in the development of policy.

Gatwick Airport continues to support the Government's view of ANASE being an important step forward in understanding people's attitudes towards aviation noise. The report findings will continue to be reflected on and considered by Gatwick Airport when formulating noise strategies, objectives and plans.

SURVEY OF NOISE ATTITUDES (SONA) 2014: AIRCRAFT

Airports aim to satisfy the demands of travellers and provide jobs: but they can cause adverse effects on the environment and people living nearby. A major form of adverse effect is that from aircraft noise. Airport planning and development planning must take account of the aircraft noise exposure to residents; airport operators and interested government departments have to view aircraft operations in the context of the related airport noise. These assessments are usually carried out in the UK, and in most countries of the world, by using noise exposure indices.

This report describes a research study to obtain new and updated evidence on attitudes to aviation noise around airports in England, and how they relate to the UK aircraft noise exposure indices. The study was commissioned by the Department for Transport, and builds on earlier noise attitude surveys commissioned by DEFRA.

In part it aims to review the use of the $L_{Aeq,\,16h}$ noise contour which was adopted in 1990, based on an aircraft noise attitude survey undertaken in 1982 and reported as the UK Aircraft Noise Index Study (ANIS) in 1985. The 57dB L_{Aeq16h} contour was chosen as the threshold of community annoyance because it 'indicated a marked increase in some reported measures of disturbance', with 63 and 69dB $L_{Aeq,\,16h}$ representing medium and high annoyance and subsequently incorporated into planning policy guidance.

The SoNA study considered 1,877 participants using face-to-face surveys on attitudes to civil aircraft noise. Respondents were selected using a random, partially-clustered approach from around nine airports in England, having been exposed to average $L_{Aeq,\,16h}$ noise levels of at least 51dB in the summer of 2013.

Using the data gathered in the surveys, the study compared reported mean annoyance scores against average summer-day noise exposure defined using different noise indicators including N above (N60 or N70).

Evidence was found that mean annoyance score correlated well with the current average summer day noise exposure contour ($L_{Aeq,16h}$) whilst there was no evidence found that other metrics correlated better with annoyance than $L_{Aeq,16h}$.

However, the study did note that residents can struggle to understand the L_{Aeq} measure which is time averaged and reported on a logarithmic scale. It noted that there is merit in considering the greater use of N above (N60 or N70) metrics as supplementary metrics to help portray noise exposure but recognising that evidence-based decisions should continue to use $L_{Aeq, 16h}$.

When comparing the results to previous studies (ANIS, ANASE and Miedema) Annoyance scores were found to be comparable however for a given noise exposure, a lower proportion of respondents was found to be highly annoyed. This was demonstrated with the same percentage of respondents (9%) said by ANIS to be highly annoyed at 57 dB $L_{Aeq, 16h}$ now showing annoyance in SoNA at 54 dB.

Evidence was found that non-acoustic factors such as noise sensitivity, approximated social grade, and expectations – both prior to moving to an area exposed to aircraft noise and in the future – influence reported aircraft noise annoyance and these non-acoustic factors may be as important as the noise exposure level.

The full report can be viewed online by following this link:
https://publicapps.caa.co.uk/docs/33/CAP%201506%20FEB17.pdf

PRE CONSULTATION INFORMATION

In preparing the initial 'Round One' 2010 – 2015 Noise Action Plan we held a series of pre-consultation events with representatives from airlines, NATS, Local Authorities, local environment amenity groups and members of the Gatwick Airport Consultative Committee (GATCOM).

In producing this revised action plan we have consulted with the Noise Management Board, GATCOM, members of the Noise and Track Monitoring Advisory Group (NaTMAG), Crawley Borough Council and West Sussex County Council, and advised the Noise Management Board of this process, in line with the guidance issued from DEFRA.

Details of feedback received during this revision process is provided in Annex 9.

SECTION 6 – AVIATION POLICY AND REGULATION OVERVIEW

There are three main tiers of regulation which govern aircraft noise in the UK: International; European and national.

INTERNATIONAL REGULATION

The International Civil Aviation Organisation (ICAO) is an intergovernmental organisation. It aims to develop the principles and techniques of international civil air navigation and foster the planning and development of international air transport. ICAO establishes International Standards, Recommended Practices and Procedures regarding the technical areas of aviation, including aircraft noise. The Standards, once adopted, are put into effect by each ICAO member state in its own country.

An important pillar of the Balanced Approach to Aircraft Noise Management is the reduction of noise at source. Aircraft noise ("noise at source") has been controlled since the 1970s by the setting of noise limits for aircraft in the form Standards and Recommended Practices (SARPs) contained in Annex 16 to the Convention on International Civil Aviation (the "Chicago Convention"). This continues to be the case today. Noise provisions appear in Volume I of Annex 16. The primary purpose of noise certification is to ensure that the latest available noise reduction technology is incorporated into aircraft design and that this is demonstrated by procedures that are relevant to day-to-day operations. This aims to ensure that noise reductions offered by technology are reflected in reductions around airports.

The first noise standard was developed by the ICAO Committee on Aircraft Noise in 1971 and became applicable in 1973, setting noise limits as a direct function of Maximum Take-off Mass (MTOM) in order to recognize that heavier aeroplanes, which were of greater transport capability, produce more noise than lighter aeroplane types. This is the Chapter 2 Noise Standard contained in Annex 16, Volume I.

In the years following the introduction of Chapter 2, much higher bypass ratio jet engines were introduced into service. Not only did this new technology deliver improved fuel efficiency, it also resulted in reductions in engine noise. This allowed for the ICAO noise standard to be made more stringent and in 1977 the Chapter 3 Noise Standard was added to Annex 16, Volume I. In the following years, further noise reduction technologies were incorporated into engine and airframe designs which led to incremental improvements in aircraft noise performance and this resulted in progressively further increases in the stringency of noise standards as reflected in Annex 16, Volume I, Chapter 4 and Chapter 14.

Over time it has become common parlance when discussing aviation noise to refer to civil jet aircraft by which chapter of Annex 16 Volume 1 they sit in. The adoption of progressively more stringent standards has encouraged the phase out of noisier aircraft meeting the noise standards of earlier Chapters. Chapter 2 aeroplanes have been banned from operating within the EU since 1st April 2002, unless they are granted specific exemptions. The vast majority of civil aircraft now operating therefore fall within Chapters 3 and 4, and are much quieter than the previous Chapter 2 aircraft types. As yet, there is no agreed date for the phase out of Chapter 3 aircraft.

All new aircraft manufactured from 2006 onwards must meet the requirements of Chapter 4. The standard for Chapter 4 has been set at 10dB quieter than Chapter 3. This is based on an aggregate of reductions in noise measured at three standardised locations close to an airport. During the

process of agreeing the Chapter 4 standard, the industry discussed a stricter level at 18dB (aggregate) below the current Chapter 3, which would have reflected best available technology. This now forms the basis of Chapter 14 standard adopted in 2014 by the ICAO Council. This represented a new noise standard for jet and propeller-driven aeroplanes which is Chapter 4 minus 7dB (Chapter 3, -17dB). This new, more stringent standard will be the mainstay ICAO Standard for subsonic jet and propeller-driven aeroplane noise for the coming years. It is applicable to new aeroplane types submitted for certification on or after 31 December 2017, and on or after 31 December 2020 for aircraft less than 55 tonnes in mass.

The new Chapter 14 noise standard is expected to drive the continued reduction in aircraft noise emissions and lead to long term reductions in the number of people affected by aircraft noise.

ICAO also requires Member States to adopt a “balanced approach” to noise management. Both the EU and the UK have adopted the ICAO “Balanced Approach to Airport Noise Management”.

Where a noise problem has been identified at an airport, the Balanced Approach process requires the agreement of a noise objective. Following this, all potential measures to manage noise at the airport must be identified, and a cost benefit analysis to determine the most cost-effective package of measures, carried out.

The Balanced Approach consists of four main elements:

- **Noise at source**
- **Land use planning**
- **Operating procedures**
- **Operational restrictions**

NOISE AT SOURCE

Aircraft noise is generated by a number of different ‘sources’, though the dominant one is still the main engines, on approach airframe noise is now becoming important. Through the work of ICAO and the development of the aircraft chapter standards, the industry has invested heavily in Research and Development to continually reduce the noise impact of aviation.

LAND USE PLANNING

Land use planning covers a wide range of measures aimed at improving the noise climate around airports. The most effective long-term options include the definition of noise zones in which there are restrictions on residential and other noise sensitive property development, and these are used widely in the UK and across Europe.

OPERATING PROCEDURES

Using defined, or 'noise preferential' routes (NPR's) is one way of minimising exposure to noise for people living near airports. Such routes are chosen because they direct aircraft, where possible, over less densely populated areas.

Although originally developed as a procedure for reducing fuel use, Continuous Descent Operation (CDO) is an important tool for reducing the noise of aircraft approaching airports. It involves starting a continuous steady descent, from 6,000ft or higher, rather than following a number of short descents to set 'cleared' altitudes where level segments are flow before finally joining the 3° approach glide-slope from below, as is normally required by Air Traffic Control.

The CDO technique results in lower noise levels on the ground through two effects:

1. the CDO flight-path is always higher than in the traditional stepped approach - being further from the ground also results in lower noise levels;
2. by keeping the aircraft on a continuous descent, the overall engine power levels are kept lower, generating less noise than if the aircraft were required to fly level.

Gatwick Airport Ltd raised the level at which a CDO is measured to 7,000ft in 2016 and is exploring ways to raise this further through our work with the Noise Management Board.

Additional noise reductions may be achieved by using a Low Power/Low Drag (LPLD) procedure. In this, the aircraft is flown in a 'clean' condition (i.e. with no flap or wheels deployed) as long as possible, consistent with safety, this can result in lower noise levels when the aircraft are close to the ground.

OPERATING RESTRICTIONS

Operating restrictions may be necessary for some airports where noise mitigation is required, and other methods prove to be ineffective. In this respect, as part of the "Balanced Approach", operating restrictions may be applied to aircraft whose noise emissions are marginally below the Chapter 3 limits. Strict rules apply for the introduction of operating restrictions to ensure fair competition across Europe and maintain the efficiency of the EU aviation network.

At a number of airports, there are restrictions over and above the noise certification standard, the most common of which are applied at night. One example of this is the Night Jet Restrictions Scheme used at the "designated" London airports.

EUROPEAN REGULATION

The EU works to define the approach towards a common aviation policy in Europe. The EU has issued various directives relating to environmental issues including for the regulation of aircraft noise standards. Member States are obliged to comply with the requirements of the directives and incorporate them into national legislation.

On 23 June 2016, the EU referendum took place and the people of the United Kingdom voted to leave the European Union. Until exit negotiations are concluded, the UK remains a full member of the European Union and all the rights and obligations of EU membership remain in force. During this period the Government will continue to negotiate, implement and apply EU legislation.

The directives of most relevance to aircraft noise as follows:

EC Directive 92/14/EEC – This directive banned Chapter 2 aircraft from landing in the EU from 1 April 2002.

EC Directive 2002/49 ("Environmental Noise Directive") – This requires Member States to create noise maps from all transport sources in urban areas by 2007 and to develop and adopt Noise Action Plans to manage noise by 2008, and to repeat the mapping and produce revised Noise Action Plans every five years. This Noise Action Plan meets that requirement. The directive also aims to harmonise methods for measuring noise across the EU, but it does not include noise limits.

EU Regulation 598/2014 -This regulation applies rules and procedures with regard to the introduction of noise-related operating restrictions at Union airports. This regulation replaced an earlier EC Directive, 2002/30 (March 2002) which prescribed that the ICAO balanced approach would be followed when the introduction of noise related operating restrictions was considered at EU airports. EU598/2014 updated 2002/30/EC by being more specific regarding the rights and

responsibilities of the interested parties during the noise assessment process, and provides for a new and wider definition of what constitutes an operating restriction:

'operating restriction' means a noise-related action that limits access to or reduces the operational capacity of an airport, including operating restrictions aimed at the withdrawal from operations of marginally compliant aircraft at specific airports as well as operating restrictions of a partial nature, which for example apply for an identified period of time during the day or only for certain runways at the airport.

When a new operating restriction is being considered, EU598/2014 requires a defined objective to be set, and demonstration of why other measures within the balanced approach (which would not restrict capacity) would not achieve the objective. It also prescribes a process for evaluation of the cost effectiveness of the proposed operating restrictions which involves reviewing the relative costs of noise restrictions options and considering how many people would benefit from them. New restrictions must be consulted upon, and then prior to their introduction a period of notice must be given.

EU598/2014 anticipates the introduction of noise restrictions aimed at reducing the number of marginally compliant Chapter 3 aircraft. It prohibits the introduction of restrictions aiming to reduce the number of aircraft meeting the Chapter 4 standard.

NATIONAL REGULATION

ACTS OF PARLIAMENT AND REGULATIONS

The UK Government also enacts Acts of Parliament and regulations which deal with aircraft noise. The relevant legislation is detailed below:

- **The Civil Aviation Acts 1982 and 2006**

These Acts grant the Government powers to introduce noise control measures to limit or mitigate the effect of noise and vibration connected with taking off or landing aircraft at designated airports (the Secretary of State has currently designated Gatwick). These powers are widened by the Civil Aviation Act 2006. The Act also permits an airport authority to charge aircraft operators for use of the airport based on noise and emissions. Airport operators can thereby introduce differential charges to incentivise the use of quieter and cleaner aircraft.

The Act also permits airport operators to levy financial penalties on aircraft operators who breach noise abatement requirements imposed by the Secretary of State. A sum equal to the penalties received must then be paid for the benefit of people who live in the vicinity of the airport. At Gatwick Airport, we enforce this power and did so long before 2006. All fines are paid to an independent charity, the Gatwick Airport Community Trust.

- **Airports Act 1986**

This Act gives power to the Secretary of State to make orders if it appears to them that the existing runway capacity of the airport is not fully utilised for a substantial proportion of the time during which it is available. It includes powers to limit the number of occasions on which aircraft may land or take off at an airport and schemes to allocate airport capacity.

- **Aeroplane Noise Regulations 1999**

These regulations set out the noise certificate requirements for both propeller and jet aeroplanes registered in the UK. It makes provision to ensure that no aircraft can land or take off in the UK without a noise certificate issued by its competent authority which meets at least equal requirements to those for UK registered aircraft. The regulations make reference to noise certification standards and noise limits issued by ICAO and also provides a list of aircraft that are exempt from the ICAO noise certification.

In accordance with its powers under the Civil Aviation Acts, the DfT has direct control over noise at Gatwick Airport and determines the night flight restrictions applicable to the designated London airports.

- **The 2003 Air Transport White Paper**

The 2003 Air Transport White Paper (2003 ATWP) was intended to provide a strategic framework for the development of air travel in the UK for the next 30 years. In case the conditions attached to the construction of a third Heathrow runway could not be met, the ATWP required that land at Gatwick be safeguarded for development of a second runway after 2019. This safeguarding presently remains in place.

- **The Aerodromes (Noise Restrictions) (Rules and Procedures) Regulations 2003**

The Aerodromes (Noise Restrictions) (Rules and Procedures) Regulations 2003 set out the procedures which major airports should follow when considering noise amelioration measures. Broadly, the Regulations require aerodromes to follow the 'balanced approach' when dealing with noise problems at an airport. These regulations transposed the EC Directive 2002/30/EC into UK law, they remain "within" the boundaries prescribed by EU598/2014, however, presumably were the UK to remain part of the EU, would be updated in accordance with it.

The main rules are that aerodromes:

- may consider economic incentives as a noise measure;
- shall not impose a measure or a combination of measures which is more restrictive than is necessary to achieve the environmental objectives established for the airport by the Airport Operator or in the case of a designated airport, the Secretary of State;
- shall not discriminate on grounds of the nationality or the identity of the air carrier or the aircraft manufacturer;
- should take into account the likely costs and benefits of the various noise measures available as well as airport-specific characteristics;
- when introducing restrictions based on an aircraft's noise performance, should base these upon the noise performance of the aircraft as determined by the certification procedure conducted in accordance with ICAO Annex 16;
- shall establish one or more environmental objectives for the airport before considering any measures under the Regulations.

- **Environmental Noise Objectives**

In June 2006, the Secretary of State published long-term statutory environmental noise objectives for Gatwick Airport. These are:

- to progressively encourage the use of quieter aircraft
- avoid allowing the overall noise from aircraft during the night quota period to increase above what was permitted in 2002- 2003
- to meet other noise-abatement objectives as adopted from time to time.

- **The Environmental Noise (England) Regulations 2006 (as amended)**

These regulations transpose the requirements of EC Directive 2002/49/EC (Environment Noise Directive – see above) into UK law. They place a duty on the Secretary of State to produce strategic noise maps and, under regulation 18, airport operators are obliged to produce noise action plans based on the strategic noise maps.

- **Local Authorities**

As well as Government legislation, additional noise-related controls are introduced by local planning authorities as part of the planning system. For example at Gatwick Airport there are several planning conditions relating to North Terminal which require towing of aircraft between 23:00 - 06:30 on some aircraft stands as well as limits of the amount of aircraft engine tests permitted. This is often done by way of planning obligations contained in Section 106 Legal Agreements made between the airport operator and the planning authority. Gatwick Airport signed a re-negotiated S106 Agreement in December 2015. This agreement, valid until 2018, outlines a number of obligations and action plan action; this is independently audited annually.

For details of Gatwick Airport's S106 Legal Agreement with West Sussex County Council and Crawley Borough Council please refer to our website[2].

- **2013 Aviation Policy Framework**

The **2013 Aviation Policy Framework (APF)** fully replaced the 2003 ATWP as Government's policy on aviation, alongside any decisions Government would later make taking account of the recommendations of the independent Airports Commission review which was ongoing at the time. The APF strongly supports making best use of existing airport capacity as part of a strategy to promote a vibrant aviation sector (§1.24, §1.60 and other references). This policy has been re-affirmed recently in the revised draft Airports National Policy Statement where Government states that it is supportive of all airports who wish to make best use of their existing runways (e.g. para 1.37).

The 2013 APF focuses on the benefits of aviation and its environmental impacts and frames national policy to strike a balance between the two. The APF seeks to integrate aviation noise policy contextually with other Government policies for land use planning in the National Planning Policy Framework (NPPF) and the promotion of good health and good quality of life through the management of noise in the Noise Policy Statement for England (NPSE). The APF also has wider objectives in relation to Safety, Security, Competition and Regulation Policy and Passenger rights.

[2] https://www.gatwickairport.com/business-community/community-sustainability/sustainability/s106-agreement/

- **Draft Airports National Policy Statement**

A Draft Airports National Policy Statement ("NPS") was published on 2 February 2017, for consultation running through to 25 May 2017. The draft NPS sets out the Government's policy on the need for new airport capacity in the South East of England, and its preferred location and scheme for delivering this capacity. In addition to work on the NPS, the Government plans to consult on various elements of a new Aviation Strategy during 2018. This will replace the Aviation Policy Framework (2013) and to include consideration of airport development requirements at all UK airports.

- **Revised Draft Airports National Policy Statement**

Between February and May 2017, the Department for Transport consulted on a draft Airports National Policy Statement (NPS), and received more than 70,000 responses from across the UK. In October 2017, the Government launched a period of further consultation to give people the chance to consider updated evidence which was unavailable in February 2017.

- **UK Airspace Policy**

The Government confirmed in October 2017 that it will be establishing a new independent noise body, which will help to ensure the communities around UK airports have a say in airspace changes which may affect them. The Independent Commission on Civil Aviation Noise (ICCAN) will produce guidance and best practice for making sure the process for taking airspace change decisions is trusted and transparent. To ensure this is happening, there will be a review of ICCAN within two years, with a view to considering whether statutory powers are required.

The announcement confirms that Government accepts recent research regarding the way noise effects should be assessed. These support the continued use of the L_{eq} noise assessment metric, but relating noise to risk of adverse effects to health and quality of life. Supplementary noise metrics are to be used to capture frequency of noise events in areas affected by noise below levels below those where adverse effects to health or quality of life occur.

It is intended that measures set out in October 2017 will enable the UK to make much greater use of new technology which gives the UK the ability to manage its airspace more effectively to tackle delays, cut emissions and reduce the need for stacking above the UK's busiest airports. More detailed methods of assessing the noise impacts of the required airspace changes are being consulted on.

GENERAL PLANNING POLICY – THE NPSE, AND THE NPPF

THE NOISE POLICY STATEMENT FOR ENGLAND

The Noise Policy Statement for England (NPSE) of March 2010 states the long-term vision of Government noise policy is to "promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development".

The long-term vision is supported by the following aims; through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- Avoid significant adverse impacts on health and quality of life;
- Mitigate and minimise adverse impacts on health and quality of life;
- Where possible, contribute to the improvement of health and quality of life.

The intention is that the NPSE should apply to all types of noise apart from noise in the workplace (occupational noise). For the purposes of the NPSE, "noise" includes:

- "environmental noise" which includes noise from transportation sources;
- "neighbour noise" which includes noise from inside and outside people's homes; and
- "neighbourhood noise" which includes noise arising from within the community such as industrial and entertainment premises, trade and business premises, construction sites and noise in the street.

The NPSE introduced the concepts of the Significant Observable Adverse Effect Level (SOAEL) and the Lowest Observable Adverse Effect Level (LOAEL) to draw the distinction between those noise levels that should be avoided (above SOAEL) and those that should be minimised (above LOAEL), all in the context of Government policy on sustainable development. Recent government research (the SONA 2014 report) indicates that the LOAEL is at L_{eq} 16 hour 51dB and recent airport planning decisions agree that the SOAEL is at L_{eq} 16 hr 63dB.

THE NATIONAL PLANNING POLICY FRAMEWORK (NPPF)

The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these are expected to be applied. The NPPF provides Government's policies to promote sustainable development and sets out that the purpose of the planning system is to contribute to the achievement of sustainable development[3]. Sustainable development includes three dimensions: economic, social and environmental, and thus, when planning decisions are made to increase capacity, the process requires weighing the relative balance of these three factors.

Planning law requires that applications for planning permission must be determined in accordance with the development plan, unless material considerations indicate otherwise. The National Planning Policy Framework must be taken into account in the preparation of local and neighbourhood plans, and is a material consideration in planning decisions. Planning policies and decisions must reflect and where appropriate promote relevant EU obligations and statutory requirements.

The NPPF does not contain specific policies for nationally significant infrastructure projects for which particular considerations apply. These are determined in accordance with the decision-making framework set out in the Planning Act 2008 and relevant national policy statements for

[3] NPPF §6

major infrastructure, as well as any other matters that are considered both important and relevant (which may include the National Planning Policy Framework). National policy statements form part of the overall framework of national planning policy, and are a material consideration in decisions on planning applications.

With reference to airports, the NPPF states:

*"When planning for ports, airports and airfields that are not subject to a separate national policy statement, plans should take account of their growth and role in serving business, leisure, training and emergency service needs. Plans should take account of this Framework (NPPF) as well as the principles set out in the relevant national policy statements and the Government Framework for UK Aviation."[*NPPF §33]

GOVERNMENT AVIATION NOISE POLICY

The Government's current aviation noise policy is encapsulated in the 2017 Airspace Policy Consultation Response, October 2017, as follows[4]:

"The government's overall policy on aviation noise is to limit and, where possible, reduce the number of people in the UK significantly affected by aircraft noise, as part of a policy of sharing benefits of noise reduction between industry and communities in support of sustainable development. Consistent with the Noise Policy Statement for England…"

The Noise Policy Statement for England makes a distinction between those significant adversely affected, and those adversely affected, and requires the focus of noise control to be on those people significantly adversely affected because those are the people most at risk of health impacts.

Within the overarching policy, "limiting" the effects of noise means avoiding significant adverse effects to health and quality of life, mitigating adverse effects, and where possible contributing to the improvement of health and quality of life. [Feb 2017 Airspace Policy Consultation §5.28]. Whereas Government's primary objective is economic growth [Ref APF Executive Summary §5], the noise policy can be interpreted as Government wanting to regulate aviation growth so that it occurs sustainably and so that industry continues to have the incentive to invest and deliver long term reductions in noise.

[4] §2.69 Consultation Response on UK Airspace Policy: A framework for balanced decisions on the design and use of airspace – October 2017.

SECTION 7 – NOISE MANAGEMENT AT GATWICK AIRPORT

Airports bring positive economic and social benefits as well as environmental impacts. They are important to the economy, providing jobs, encouraging inward investment and boosting local tourism. However, they can also have an impact for those communities that exist around airports. Noise remains a significant issue for people living or working close to airports or under flight paths.

Some of this noise results from Gatwick Airport's own operations, noise which we have the ability to directly control. However, noise is also generated from sources outside our direct control but where we can exert influence to bring about change. Limiting and, where possible, reducing the impact of noise is a long standing commitment of Gatwick Airport and is critical to maintaining the airport's licence to operate and grow.

OUR APPROACH

Gatwick is a designated airport, so the Government sets the policy framework which influences how the airport responds to aircraft noise issues. The Government's Aviation Policy Framework outlines several ways to control, mitigate and compensate for noise.

The Department for Transport has direct control over noise at Gatwick Airport. Local authorities also contribute to noise controls and we also work with airlines, air navigation services providers and local authorities towards achieving our noise objectives.

OUR PLANS

Alongside the statutory noise objectives, Gatwick Airport has set the following long term objective for the management of aircraft noise:

'To gain the trust of our stakeholders that we are using best practicable means to minimise aircraft noise impacts'

CURRENT MEASURES TO MANAGE AIRCRAFT NOISE AT GATWICK AIRPORT

We believe that we have a full and comprehensive range of noise management measures already in place when compared with other similar airports. These measures cover operational procedures, stakeholder communication and engagement as well as mitigation and compensation schemes.

OPERATIONAL PROCEDURES - AERONAUTICAL INFORMATION PUBLICATION

In aviation, an Aeronautical Information Publication (or AIP) is defined by the International Civil Aviation Organization as a publication issued by or with the authority of a state and containing aeronautical information of a lasting character essential to air navigation. It is designed to be a manual containing thorough details of regulations, procedures and other information pertinent to flying aircraft in the particular country to which it relates. It is usually issued by or on behalf of the respective Civil Aviation Administration.

The structure and contents of AIPs are standardised by international agreement through ICAO. AIPs normally have three parts – GEN (general), ENR (en route) and AD (aerodromes). The

document contains many charts; most of these are in the AD section where details and charts of all public aerodromes are published.

AIPs are kept up-to-date by regular revision on a fixed cycle. For operationally significant changes in information, the cycle known as the AIRAC (Aeronautical Information Regulation and Control) cycle is used: revisions are produced every 56 days (double AIRAC cycle) or every 28 days (single AIRAC cycle). These changes are received well in advance so that users of the aeronautical data can update their Flight Management Systems (FMS).

A range of noise controls relating directly to aircraft operations are set out in statutory notices and are published in the Gatwick Aerodrome AIP and elsewhere as appropriate. These controls cover aspects such as Continuous Descent Operations (CDAs), Low Power / Low Drag, departures noise abatement procedures and night flight restrictions.

A range of noise controls relating directly to aircraft operations at Gatwick Airport are set out in statutory notices and are published in the UK Aeronautical Information Package (UK AIP).

GATWICK AIRPORT AIP REQUIREMENTS

Departures:

- After take-off the aircraft shall be operated in such a way that it is at a height of not less than 1,000ft above aerodrome level at 6.5 km from the start of roll as measured along the departure track of that aircraft.
- After taking off the aircraft shall avoid flying over the congested areas of Horley and Crawley.

Arrivals:

- Between the hours of 23:30 (local) and 06:00 (local), inbound aircraft, whether or not making use of the ILS (instrument landing system) localiser and irrespective of weight or type of approach, shall not join the centre-line below 3,000ft (Gatwick QNH) closer than 10nm (nautical miles) from touchdown.
- Before landing at the aerodrome the aircraft shall maintain as high an altitude as practicable and shall not fly over the congested areas of Crawley, East Grinstead, Horley and Horsham at an altitude of less than 3,000ft (Gatwick QNH) nor over the congested area of Lingfield at an altitude of less than 2,000ft (Gatwick QNH).
- Additionally, pilots are requested to avoid the use of reverse thrust after landing, unless required for safe operation of the aircraft, between 23:00 and 06:00 (local time). This is to minimise disturbance in areas adjacent to the airport.

CONTINUOUS DESCENT OPERATIONS (CDO)

A CDO is a technique of flight in which a pilot descends at a continuous rate to join the glide-path at the correct height for the distance and thereby avoid the need for extended periods of level flight. The intention is to keep aircraft higher for longer, using reduced thrust and thereby reducing arrival noise. CDO requires co-operation between Air Traffic Control (ATC) and pilots in order to both provide information and guidance to allow the pilot to fly the optimum CDO, and for the pilot to manage the descent to deliver the aircraft safely and efficiently at the ILS joining point. There are numerous factors that can affect the delivery of an efficient CDO including weather, crew and ATC familiarisation and traffic conditions.

Levels of CDO achievement are regularly reported back to the Gatwick Airport Consultative Committee (GATCOM) as well as the Flight Operations Performance & Safety Committee (FLOPSC), which includes airline and ATC representatives. This engagement is focused on delivering continuous operational improvement in airline CDO achievement.

In 2016, Gatwick Airport raised the altitude from which CDO is measured from 6,000ft to 7,000ft and will continue to explore the feasibility of raising this further.

LOW POWER / LOW DRAG

Within the Gatwick Airport AIP, part of the Noise Abatement Procedures require aircraft that are approaching the aerodrome to land shall, commensurate with its ATC clearance, minimise noise disturbance by the use of continuous descent and low power, low drag operating procedures.

Where the use of these procedures is not practicable, the aircraft shall maintain as high an altitude as possible. In addition, when descending on initial approach, including the closing heading, and on intermediate and final approach, thrust reductions should be achieved where possible by maintaining a 'clean' aircraft configuration and by landing with reduced flap, provided that in all the circumstances of the flight this is consistent with safe operation of the aircraft.

Currently, apart from visual observations, there is no process for measuring low power low drag compliance with the AIP instruction. Thus Gatwick airport has focused on airline engagement and sharing best practice.

NIGHT RESTRICTIONS

The current night restrictions regime was introduced by the Department for Transport in 2006 and initially was meant to remain in force until 2012. This has since been extended until the end of summer 2017 when a revised regime was introduced.

There have, however, been night restrictions in force at Gatwick Airport for many years. Details of the number of aircraft moments and quota count permitted per season are detailed in Annex 6 – Summary of Limit Values in Place.

Gatwick Airport reports regularly to GATCOM and to the Department for Transport on usage of the movements limits and the quota counts utilised, details of any dispensations or exemptions granted. All dispensations granted by the airport have to be reported to the Department for Transport in writing within one week of the event occurring.

NOISE PREFERENTIAL ROUTEINGS (NPRS)

Noise Preferential Routes provide volumes of pre-defined airspace within which Standard Instrument Departure (SID) Routes are established which aircraft must follow on departure from an aerodrome and so provide some certainty as to which areas will be exposed to aircraft activity.

All aircraft leaving Gatwick Airport should follow the Noise Preferential Routes (NPRs) up to an altitude of 3,000ft or 4,000ft depending on the route. Although aircraft may be directed outside of the NPR below this altitude if required to maintain safety of flight, e.g. to avoid thunderstorms or other traffic.

With reference to Gatwick Airport, as a designated aerodrome, the locations of all of the Noise Preferential Routes are determined by the Department for Transport and have been in their present locations since the late 1960s and were designed to avoid over flight of built-up areas where possible.

A Noise Preferential Routes (NPR) consists of a 'centreline' and an associated compliance monitoring swathe (3km across, i.e. 1.5km either side of the NPR centreline). As long as aircraft remain within this 'swathe' up to the minimum vectoring altitude (3,000ft or 4,000ft), they are deemed to be on track.

Air Traffic Control is responsible for the routing of aircraft once airborne, once the aircraft is above the minimum vectoring altitude, they may give a flight a more direct heading (known as vectoring) off the route. This is subject to certain factors including weather conditions and/or other traffic in the vicinity.

There is a map illustrating the location of all of the Noise Preferential Routes (NPRs) at Gatwick Airport in Annex 7.

NOISE LIMITS

The current departure noise limits of 94 dB(A) (day), 89 dB(A) (shoulder) and 87 dB(A) (night) were implemented at the London airports (Gatwick, Heathrow and Stansted) in 2001. The noise limits are related to a fixed reference distance of 6.5 km from start of roll and have been defined in terms of a maximum A-weighted noise level, LAmax since 1992-93.

Recognising that the noise limits had been in place for many years, the Government announced in its March 2013 Aviation Policy Framework that ANMAC would review the departure noise abatement procedures at the London airports, including noise limits and use of penalties, to ensure that these remain appropriately balanced and effective.

The study by the ANMAC Technical Working Group has identified that there is limited scope for reductions in the noise limits at Heathrow until the retirement of the remaining Boeing 747-400 fleet. A small reduction of 1 to 2 dB in the daytime and shoulder limits might be feasible without causing the overall number of infringements to increase above historic levels.

The results for Gatwick and Stansted indicate that the current daytime, shoulder and night limits could be lowered, by up to 3 decibels or more in some cases, without significantly impacting the current fleets at those airports.

A lowering of the noise limits at Gatwick and Stansted would provide a backstop, dissuading the re-introduction of the noisiest aircraft types, but it would mean that the limits would no longer be applied equally across the three airports (which has been a matter of Government policy for many years).

Analysis has shown that whilst reductions in noise levels at the 6.5 km location could be achieved through changes to airline Noise Abatement Departure Procedures, this would be at the expense of noise increases elsewhere along or to the side of the flight path

Regarding the wider influence of Noise Abatement Departure Procedures on departure noise, ICAO guidance provides two examples: NADP 1 which can mitigate noise close to the aerodrome, and NADP 2 which can mitigate noise more distant from the aerodrome. A wide range of procedures may be developed within the NADP 1 and 2 definitions.

The limits apply at fixed noise monitors only. These night time limits are consistent with the night restrictions regime. Airlines whose aircraft breach the noise limits are fined by Gatwick Airport.

There are no arrivals noise limits.

1,000 FT RULE

Aircraft are required to be at a height of not less than 1,000 feet at 6.5 km from start-of-roll. After passing the 1,000 feet point (at 6.5 km), aircraft are then required to maintain a climb gradient of not less than 4% to an altitude of 4,000 feet.

The rationale for the climb gradient requirement is to ensure that progressively reducing noise levels at points on the ground under the flight path are achieved.

GROUND NOISE

Aircraft engine testing is also controlled by Gatwick Airport. This is done by establishing and enforcing ground noise controls by way of Gatwick Airport Directives (GADs).

In the case of engine run-up restrictions, the GAD states that unless there are urgent operational reasons for engine testing to be carried out at night, ground running must be confined to the period 07:00-22:00 local time. There are additional restrictions regarding the running of auxiliary power units.

A range of ground noise metrics are presented to the quarterly meetings of the Noise and Track Monitoring Advisory Group. These include Fixed Electrical Group Power availability, aircraft Auxiliary Power Unit audit results and the number of aircraft engine tests carried out.

NOISE MONITORING

Gatwick Airport has a noise and track-keeping system, which takes data from ATC radars, combines it with flight information along with data from both fixed and mobile noise monitors situated around the airport.

There are five fixed noise monitors around Gatwick (approximately 6.5km from either end of the runway) and six to seven mobile noise monitors located in communities further away from the airport. The mobile noise monitors are deployed for periods of typically one year and are usually located in areas affected by inbound or outbound aircraft).

The mobile noise monitors allow Gatwick Airport to gain an understanding of the noise climate in a particular area and, in conjunction with the Gatwick Noise Monitoring Group, commission detailed noise studies by our independent acoustic specialists.

NOISE CHARGES

The Conditions of Use and airport charges for Gatwick Airport are published every year in the Conditions of Use publication. The table below provides an overview of the criteria associated with each aircraft noise charge category.

Figure 1: Overview of the noise performance criteria for ICAO aircraft chapter

Charge Category	Noise Performance Criteria	Cumulative Margin (CM) Relative to ICAO Chapter 3 Limits
Chapter 3 & Below	• Does not satisfy Chapter 4 criteria.	-
Chapter 4	• Margin at each certification point is greater than 0. • Combined margin at any two certification points is greater than or equal to 2. • Cumulative margin relative to Chapter 3 limits is greater than or equal to 10.	10 <= CM < 17
Chapter 14 High	• Margin at each certification point greater than or equal to 1. • Cumulative margin relative to Chapter 3 limits is greater than or equal to 17.	17 <= CM < 20
Chapter 14 Base		20 <= CM < 23
Chapter 14 Minus		CM >= 23

Noise charges vary by time of day (Day / Night). The Day and Night periods are defined in the table below; all times are shown in UTC (GMT).

Figure 2: Defined day/night periods in the summer and winter

Charge	Day (Times in UTC)	Night (Times in UTC)
Summer (1 April – 31 October)	05:00 – 22:29	22:30 – 04:59
Winter (1 November – 31 March)	06:00 – 23:29	23:30 – 05:59

The table below details the aircraft noise charges that apply on take-off and landing.

Figure 3: Charges per ICAO chapter for the summer and winter seasons

Season	Charge Category	Charging Unit	Day	Night
Summer (1 April – 31 October)	**Unmodified A320 Family***	Per movement	£784.40	£988.02
	Chapter 3 & Below	Per movement	£78.44	£988.02
	Chapter 4	Per movement	£39.22	£494.01
	Chapter 14 High	Per movement	£23.53	£296.41
	Chapter 14 Base	Per movement	£19.61	£247.00
	Chapter 14 Minus	Per movement	£15.69	£197.60
Winter (1 November – 31 March)	**Unmodified A320 Family***	Per movement	£784.40	£988.02
	Chapter 3 & Below	Per movement	£0.00	£988.02
	Chapter 4	Per movement	£0.00	£494.01
	Chapter 14 High	Per movement	£0.00	£296.41
	Chapter 14 Base	Per movement	£0.00	£247.00
	Chapter 14 Minus	Per movement	£0.00	£197.60

*Unmodified A320 Family Aircraft Noise Charge

(1) With effect from 1 January 2018, any Airbus A320 family aircraft (A318 / A319 / A320 / A321) which has not been declared on the 'All Up Weight Return' form detailed in Schedule 5 to this Conditions of Use as having the fuel over pressure protector (FOPP) modification – as described under Section 2.2 of Gatwick Airport Independent Arrivals Review Report dated 28 January 2016 will be subject to this charge.

There are other charges applicable to aircraft movements including passenger charges, demand charges and NOx emissions charges. Full details are available here: https://www.gatwickairport.com/globalassets/publicationfiles/business_and_community/all_public_publications/2017/2017-18-conditions-of-use---final---sent-30jan17.pdf

AREAS OF OUTSTANDING NATURAL BEAUTY (AONB)

Gatwick Airport is surrounded by many AONBs hence overflight is often unavoidable. The Air Navigation Guidance (ANG) 2017 is a Department for Transport document which provides the Civil Aviation Authority with guidance on how it should exercise its air navigation functions.

Section 3.3 of the ANG also refers to overflight in the context of the protection of landscapes and scenic beauty. It states that:

a) 'in the airspace from the ground to below 4,000 feet the government's environmental priority is to limit and, where possible, reduce the total adverse effects on people;
b) where options for route design from the ground to below 4,000 feet are similar in terms of the number of people affected by total adverse noise effects, preference should be given to that option which is most consistent with existing published airspace arrangements;
c) in the airspace at or above 4,000 feet to below 7,000 feet, the environmental priority should continue to be minimising the impact of aviation noise in a manner consistent with the government's overall policy on aviation noise, unless the CAA is satisfied that the evidence presented by the sponsor demonstrates this would disproportionately increase CO_2 emissions;
d) in the airspace at or above 7,000 feet, the CAA should prioritise the reduction of aircraft CO_2 emissions and the minimising of noise is no longer the priority;
e) where practicable, it is desirable that airspace routes below 7,000 feet should seek to avoid flying over AONB and National Parks; and
f) all changes below 7,000 feet should take into account local circumstances in the development of the airspace design, including the actual height of the ground level being overflown, and should not be agreed to by the CAA before appropriate community engagement has been conducted by the sponsor'.

STAKEHOLDER COMMUNICATION AND ENGAGEMENT

ACCESSING INFORMATION

- **Flight Performance Team (FPT)**

Gatwick Airport monitors compliance with the various noise control measures detailed in the Aerodrome Information Publication (AIP) or locally and handles aircraft noise complaints through the Flight Performance Team.

The team also provides relevant statistics to the Department for Transport, the Noise and Track Monitoring Advisory Group, the Noise Management Board and the Gatwick Airport Consultative Committee.

- **Reporting**

We produce quarterly and annually FPT reports that provide information on performance against noise control measures.

- **Website and online flight tracking**

Detailed information relating to aircraft noise is available on our website. This has links to various reports, minutes from the Noise and Track Monitoring Advisory Group, the Noise Management Board and information regarding ground noise, aircraft overflight and night flights.

A further facility on the website is our flight tracking tool, the Casper Noise Lab. This is an online self-service aircraft noise complaints system showing Gatwick aircraft flight tracks in real time, heights and aircraft types. By using this facility it is possible to see where planes are flying in relation to where the complainant lives or works together with aircraft noise complaint statics in a given area.

Gatwick Airport Ltd continues to monitor the online complaints system and flight tracking service and when appropriate will introduce modifications to enhance both.

- **Complaint handling service**

Gatwick Airport's FPT registers and investigates all complaints received in line with our stated complaint handling policy.

Relevant information to help understanding of the issue is offered but the FPT will not repeatedly supply the same or similar information or substantial amounts of data, or undertake extensive data gathering exercises in individual cases.

This allows the FPT to concentrate on performance monitoring and overall studies with the aim of providing useful information about what, if any, improvements might be possible.

The FPT also continuously monitors overall performance, for example track keeping and CDA. This is not dependent on receipt of complaints.

Where there appears to be something unusual occurring it is investigated and the data is used to continue to work proactively with the airline community to enhance performance overall. See Annex 5 for complaint data.

STAKEHOLDER ENGAGEMENT

In addition to the above measures, Gatwick Airport also regularly engages with stakeholders including airlines, air navigation service providers, local community groups, local authorities and government bodies. This is done through various engagement forums such as the:

- Gatwick Airport Consultative Committee (GATCOM),
- GATCOM Steering Group,
- Noise Management Board,
- Noise and Track Monitoring Advisory Group (NaTMAG),
- Section 106 Steering Group, and
- The Gatwick Noise Monitoring Group.

MITIGATION AND COMPENSATION SCHEMES

The Government's Aviation Policy Framework states that their overall objective on noise is to limit and where possible reduce the number of people in the UK significantly affected by aircraft noise. The policy document makes clear that the acceptability of growth in aviation depends to a large extent on the industry continuing to tackle its noise impact and confirms that the Government expects the industry at all levels to continue to address noise.

The principal mitigation measure for aircraft noise impacts (at Gatwick Airport) is the provision of acoustic insulation and can be required on a statutory basis under section 79 of the Civil Aviation Act 1982. In practice however, all Gatwick Airport's current noise insulation schemes are provided on a voluntary basis and exceeds the expectations of the Aviation Policy Framework. Namely:

- Airport operators are to offer households exposed to levels of noise of 69 dB L_{Aeq},16h or more, assistance with the costs of moving.
- Airport operators are to offer acoustic insulation to noise-sensitive buildings, such as schools and hospitals, exposed to levels of noise of 63 dB L_{Aeq}, 16h or more.
- Where acoustic insulation cannot provide an appropriate or cost-effective solution, alternative mitigation measures should be offered.
- If no such schemes already exist, airport operators should consider financial assistance towards acoustic insulation for households. Where compensation schemes have been in place for many years and there are few properties still eligible for compensation, airport operators should review their schemes to ensure they remain reasonable and proportionate.
- Where airport operators are considering developments which result in an increase in noise, they should review their compensation schemes to ensure that they offer appropriate compensation to those potentially affected. As a minimum, the Government would expect airport operators to offer financial assistance towards acoustic insulation to residential properties which experience an increase in noise of 3dB or more which leaves them exposed to levels of noise of 63 dB L_{Aeq}, 16h or more.
- Any potential proposals for new nationally significant airport development projects following any Government decision on future recommendation(s) from the Airports Commission would need to consider tailored compensation schemes where appropriate, which would be subject to separate consultation.
- Airports may wish to use alternative criteria or have additional schemes based on night noise where night flights are an issue. Airport consultative committees should be involved in reviewing schemes and invited to give views on the criteria to be used.

Details of the boundaries of Gatwick's Noise Insulation Scheme, Home Owner Support Scheme and Property Market Support Bond are included in Section 15.

NEW NOISE SENSITIVE DEVELOPMENTS

Guidance on the planning of new noise sensitive development, such as housing, near airports can be found in some local authority local planning guidance. Following the repeal of national guidance on the subject, the Institute of Acoustics, Chartered Institute of Environmental Health and the Association of Noise Consultants produced Professional Practice Guidance (ProPG) Planning and Noise; New Residential Development in May 2017 which promotes good acoustics design to achieved suitable design standards in new housing in existing noisy environments including near airports. Under the Noise Management Board's work programme Gatwick Airport has worked with local authorities to promote good land use planning, and held a workshop sharing experiences in November 2017.

SECTION 8 – THE INDEPENDENT REVIEW OF ARRIVALS AND THE NOISE MANAGEMENT BOARD

THE INDEPENDENT REVIEW OF ARRIVALS

INTRODUCTION

In August 2015, in response to feedback from some of our local residents and resident groups, the then Chairman of Gatwick Airport Ltd, Sir Roy McNulty, commissioned an independent review of air traffic around Gatwick.

BACKGROUND

The Independent Review of Arrivals was led by industry experts Bo Redeborn and Graham Lake who were asked to provide a fully independent, professional analysis and report. As part of the review, the Independent Review of Arrivals team engaged with an extensive range of organisations, individuals, Parish, Town and District County Councils and MPs. They also held three interactive public meetings with local MPs which were attended by several hundred people. In addition, they received feedback and comments by email.

KEY FOCUS OF THE REVIEW

The review took over four months to complete and was published on 28 January 2016. Its main aim was:

- To make sure everything that can reasonably be done to alleviate issues raised by the local community is being done. This includes by Gatwick Airport as well as other agencies closely involved in the industry i.e. NATS, Civil Aviation Authority, airlines and the Department for Transport.
- To understand if the way Gatwick communicates with and provides information to the local community, including the handling of complaints, is fully adequate.

MAIN FINDINGS OF THE REVIEW

The report set out 23 practical steps that can be taken to improve noise and the key recommendations and findings from the review are as follows:

- To reduce the number of aircraft holding over land;
- To improve use of continuous descent arrivals which would generate significantly less noise, and to improve the sequencing and spacing of arrivals;
- To accelerate the modification of the Airbus A320 family of aircraft to reduce the whining noise they make during the approach phase of flight;
- To establish an independently chaired Noise Management Board to oversee joint strategies to deal with noise around the airport; and
- To develop a comprehensive online complaint management system.

GATWICK AIRPORT'S RESPONSE

Gatwick welcomed the findings of the review and published a detailed response and proposed Action Plan for the implementation of the review's 23 recommendations. This included the establishment of an independent Noise Management Board, comprising main aviation stakeholders and representatives of local communities.

A planning meeting of the proposed Noise Management Board was held on 18 May 2016.

Following publication of the Proposed Action Plan, Gatwick published its Final Action Plan. The Final Action Plan reflected the constructive feedback to the Arrivals Review and the Proposed Action Plan that has been received from communities and other stakeholders, as well as the results and conclusions of additional analysis.

NOISE MANAGEMENT BOARD

A key recommendation to come out of the Gatwick Airport Independent Arrivals Review was to establish an independently chaired Noise Management Board (NMB) to oversee joint strategies to deal with noise around the airport.

The purpose of the NMB is to develop, agree, oversee and maintain a coordinated noise management vision and consequent strategies for Gatwick, for all stakeholder organisations, intended to improve the situation for those affected by noise from aircraft using Gatwick.

This should include joint and coordinated reports through the NMB on progress of the implementation of these agreed strategies and, should seek to ensure consistent communication across all stakeholder groups, using verifiable data and transparent policies, to support the facilitation of their understanding by residents. This may also include when necessary, research and independent verification of information to be published.

The NMB can assist in ensuring that community concerns about aircraft noise are fully understood by key stakeholder organisations considering issues that may affect noise management around Gatwick. The NMB will focus initially on the implementation of recommendations from the Arrivals Review, but then extending to other important noise management issues.

The NMB should assist in the progressive development of consensus across its membership, to improve the alignment of responsibilities, initiatives and priorities of the key organisations able to influence change in the effect of noise from aircraft using Gatwick, whether for arrivals, departures or related to aircraft ground noise.

MEMBERSHIP

The Noise Management Board is made up of a wide range of industry experts and stakeholders. There are 13 seats on the Board, some of which are shared between a voting member and an alternate (back-up) member who have one vote and actively attend alternate meetings. The NMB has representation from the following members:

- Gatwick Airport Ltd
- Civil Aviation Authority (CAA)
- Department for Transport (DfT)
- National Air Traffic Services (NATS)
- Air Navigation Solutions - ANS - (the providers of air traffic services in the control tower at Gatwick)
- Airlines
- Chair of GATCOM (Gatwick Airport Consultative Committee)
- East Sussex and West Sussex County Councils
- Surrey and Kent County Councils
- The High Weald Councils Aviation Action Group (HWCAAG) and Association of Parish Councils Action Group (APCAG)
- East Sussex Communities for Control of Aircraft Noise (ESCCAN) and Tunbridge Wells Anti-Aircraft Noise Group (TWAANG)
- Communities against Gatwick Noise Emissions (CAGNE) and Plane Wrong
- Gatwick Obviously Not (GON) and People against Gatwick Noise Emissions (PAGNE)

The Board is chaired by Bo Redeborn and the secretary is Graham Lake. Bo and Graham conducted and wrote the Gatwick Airport Independent Arrivals Review.

On 18 May 2016, the NMB held a planning meeting in order to establish the membership, constitution and terms of reference for the Board. Following this, the first NMB meeting was held on 21 June 2016.

OBJECTIVES

1. The objective of the NMB is to develop, agree and oversee a coordinated noise management vision and consequent strategies for Gatwick, for all stakeholder organisations.
2. The initial focus will be on the implementation of the Recommendations of the Independent Review of Arrivals.
3. The NMB's remit extends to all important noise management issues related to Gatwick, including those related to departures, and aircraft ground noise, as well as arrivals.
4. The NMB's scope includes all commercial matters that might reasonably be expected to have a significant impact on the noise environment at Gatwick.
5. The NMB should be a body with real influence over operational stakeholders around the airport such as on airspace and aircraft operational issues.
6. The NMB should influence and monitor the effective use of noise awareness training policies for staff of all Gatwick stakeholders and reported through NATMAG.
7. The NMB should be consulted on all Gatwick noise related matters, such as compensation policy, noise insulation and community support.

8. The NMB should be a main channel (Notwithstanding the obligations of the Gatwick Areas Joint Authorities Group, hosted by Crawley Borough Council) through which GAL, NATS, ANS, Airlines, DfT and CAA communicate actions that are being taken to address the effects of noise from aircraft using Gatwick.
9. The NMB should seek to ensure the joint and co-ordinated reporting by stakeholders through the NMB, initially on progress of the Arrivals Review implementation and then on other noise issues and initiatives, and seek to facilitate better understanding by residents through more consistent communication and verifiable data.
10. The NMB should establish a mechanism to identify and address unintended and unexpected consequences of noise improvement initiatives.
11. Particular care will need to be taken by the NMB to avoid conflicting with the remits or duties of any of the other bodies already involved in noise matters related to Gatwick.
12. If and when the Government establishes an Independent Noise Authority the NMB should ensure appropriate alignment between its own Terms of Reference and the remit of such a body.
13. The NMB should agree and establish a process to set its SMART objectives and to regularly review and report its progress.
14. The NMB should establish and maintain a transparent mechanism to adapt these Terms of Reference when agreed by members of the NMB.
15. The NMB will seek to positively influence the noise environment of stakeholders by assisting the development of consensus among the various organisations represented through its membership.
16. In the event that it is not possible to reach NMB consensus on any matter, after exhausting all reasonable efforts, a majority decision can be made provided that it represents at least 75% of the NMB Membership.

MEETINGS AND REPORTING

- The NMB should meet every 2 months, or at intervals agreed by the members.
- The agenda and minutes of NMB meetings should be published (on the NMB website).
- NMB meetings will not be open to the public, unless agreed by the NMB members for specific dates or specific topics.
- It is expected that at least one public meeting will be conducted each year by the NMB, to facilitate community dialogue, a reasonable understanding in communities of the work areas of the NMB, and to report NMB progress and plans.

ONE YEAR ON

The Independent Review of Arrivals 'Recommendation IMM-20' was to provide an in-depth review of the activity and progress of the Gatwick Arrivals Review Final Action Plan developed in response to the Independent Arrivals Review.

The Imm-20 report, published on the 31st January 2017, provided an update on the range of activities and substantial work undertaken by Gatwick, industry stakeholders and the Noise Management Board (NMB). Progress one year on included:

- reduction of noise disturbance from aircraft using Gatwick;
- improved quality and transparency of information available;
- the access available to communities;
- active engagement with aviation stakeholders

A further update on progress was provided at the Gatwick Airport Airspace and Noise Management Board Public Meeting on 7th December 2017.

SECTION 9 - CONTROL MEASURES IN PLACE

CONTROL MEASURES IN PLACE APPLICABLE TO GATWICK AIRPORT

AERONAUTICAL INFORMATION PUBLICATION - LONDON GATWICK

- **EGKK AD 2.21 NOISE ABATEMENT PROCEDURES**

Adherence to the noise abatement procedures is reported quarterly and annually through Flight Performance Team Reports to the Noise and Track Monitoring Advisory Group and the Gatwick Airport Consultative Committee. These are published on the Airport website.

Performance Dashboard presented bi-monthly to the Flight Operations Performance and Safety Committee.

The FPT undertakes direct engagement with airlines to improve performance as and when required.

NIGHT FLIGHT RESTRICTIONS AT HEATHROW, GATWICK AND STANSTED AIRPORTS

Current regulations expire as of October 2017. New regime to come into effect that will expire in October 2022 with the objective to:

> 'Limit or reduce the number of people significantly affected by aircraft noise at night, including through encouraging the use of quieter aircraft, while maintaining the existing benefits of night flights'

The movements limit remains unchanged however the night quota limit will be reduced.

During the summer season, the air traffic movements limit is capped at 11,200 and during winter, this reduces to 3,250. The night quota limits will be reduced to 5,150 in the summer (from 6,200 in 2018) and to 1,785 in the winter (from 2,000 in 2017/18). This will further incentivise the use of quieter aircraft by encouraging industry to plan its operations with sufficient headroom to ensure the limits can still be complied with in the event of unplanned disruption or changes to their schedules.

Performance against the night flight restrictions are reported quarterly and annually through Flight Performance Team Reports to the Noise and Track Monitoring Advisory Group and the Gatwick Airport Consultative Committee. These are published on the Airport website.

Performance Dashboard presented bi-monthly to the Flight Operations Performance and Safety Committee.

Proactive direct engagement is undertaken by Gatwick Airport Limited with airlines, Airport Co-ordination Limited, Department for Transport and GAL Sales and Operations Planning to manage allocation, dispensations and usage.

SECTION 106 LEGAL AGREEMENT OBLIGATIONS AND NOISE ACTION PLAN

- **OBLIGATIONS 4.1 TO 4.5, ACTION PLAN ACTIONS 1 – 8**

Progress against the actions are reported annually in the Section 106 Annual Monitoring Report. Selected obligations and action plan actions are subject to audit. Final Annual Monitoring Report circulated to Crawley Borough Council and West Sussex County Council for circulation among the wider local authorities and the Gatwick Airport Consultative Committee. This report is published on the Airport website.

DECADE OF CHANGE

- **THE SUSTAINABILITY STRATEGY FOR GATWICK AIRPORT FOR 2010 – 2020**

Qualitative target of "Be consistently recognised as a best practice operator for noise management" and audited noise key performance indicators (track keeping, noise infringements and Continuous Descent Operations (CDO) compliance) included.

ENVIRONMENTAL NOISE DIRECTIVE NOISE ACTION PLAN

Contains 61 action plan actions (2013-2018) reported quarterly and annually to the Noise and Track Monitoring Advisory Group. The minutes are available online on the airport website where the annual report is also uploaded.

INDEPENDENT REVIEW OF ARRIVALS (Published January 2016)

The Noise Management Board initially focussed on the implementation of the 23 recommendations of the Independent Review of Arrivals. An annual update (Imm-20) was published in January 2017 which reported on progress against these recommendations.

A further update on progress was provided at the Gatwick Airport Airspace and Noise Management Board Public Meeting on 7th December 2017.

NOISE MANAGEMENT BOARD ANNUAL WORKPLAN

Annual workplan is negotiated, agreed and published on an annual basis, this details the key priorities and work streams of the Noise Management Board for the upcoming year including a defined short, medium and long term work plan. The workplan is publicly available from the NMB website.

SECTION 10 – EHS & ENVIRONMENTAL RISK MANAGEMENT

ENVIRONMENT, HEALTH AND SAFETY

At Gatwick Airport, we believe that exemplary environment, health and safety leadership is critical to successfully deliver a world-class service. Gatwick Airport considers environment, health and safety management a core business value and the strategy to deliver and achieve world class performance will be delivered through our approach: *GatwickSAFE - it's the way we do things around here.* It is paramount to our success and therefore demands our attention daily.

We are committed to delivering exemplary levels of environment, health and safety performance. When excellent examples are identified, we will replicate across our business and communicate them extensively so that everyone can benefit. We take our commitment to avoiding incidents, injuries and illness very seriously, learning from any incident, including near miss events, to continually improve our performance.

Our commitment to the environment and to the health and safety of everyone who visits Gatwick is at the heart of everything we do. Our priority is to build a strong EHS culture. We have an executive board member who oversees and is responsible for ensuring that environment, health and safety is always at the top of our agenda.

ENVIRONMENT, HEALTH AND SAFETY (EHS) POLICY

At Gatwick Airport we are committed to ensuring the health, safety and well-being of our employees, customers and business partners, as well as managing the impact of our business on the environment. We will achieve this by:

- Implementing and maintaining robust EHS management systems which are certified to industry recognised standards including ISO 14001, OHSAS 18001 and ISO 55001;
- Demonstrating strong, visible, felt leadership and behaviours for EHS where there is collective ownership throughout our business;
- Driving continuous improvement in our EHS performance by setting and monitoring clear, measurable objectives and key performance indicators that are visible and meaningful to our employees, achieving the vision of GatwickSAFE and meeting our Decade of Change sustainability targets;
- Protecting the environment including preventing pollution by managing pollution risks and maintaining pollution prevention systems;
- Protecting the health and well-being of our employees through proactive health surveillance and well-being initiatives;
- Incorporating EHS, both risk and opportunity identification, into our lifecycle decision making including the planning, design, construction, operation and decommissioning of our activities, facilities and assets;
- Verifying the effectiveness of our controls and plans through a robust EHS assurance programme;
- Ensuring compliance with all applicable legislation and other requirements as a minimum standard for performance;

- Ensuring our employees have the necessary information, instruction, training, supervision and resources to deliver EHS competence;
- Maintaining effective channels of communication with our employees, business partners and suppliers to ensure they have the right information, at the right time through the right media;
- Celebrating, rewarding and recognising, our successes and learning from our incidents and sharing what we learn with others.

IMPLEMENTATION

The Gatwick Airport Ltd Executive Management Board (EMB) will monitor and regularly review, this policy and supporting management systems at our Managing Corporate Responsibility (MCR) and Environment, Health & Safety and Operational Resilience (EHSOR) forums. Ensuring it remains relevant to the company's EHS risks/opportunities driving continuous performance improvement.

CERTIFICATION

Our performance has been validated by independent certification. In 2010 we obtained the ISO14001 standard for environmental management and in 2012 the OHSAS18001 standard for health and safety, demonstrating that we're managing risks and continuously improving.

ENVIRONMENTAL RISKS

Environmental risks need to be mitigated to ensure compliance with environmental legislation and to minimise environmental impact. Poor environmental performance has the potential to impact Gatwick's reputation, its licence to operate and potential to grow. These risks are mitigated at a number of levels including the implementation of an environmental management system which, as referenced above, is externally audited and certified to the ISO14001 standard. The management system includes the assessment and management of key environmental risks and opportunities including compliance obligations. Gatwick continues to monitor performance against annual improvement targets and undertakes internal audits and training programmes. Gatwick works proactively with stakeholders to ensure that it effectively manages the challenges posed to the environment by the Airport's operation.

The culture at Gatwick Airport is critically important in improving environment, health and safety. This is affected not only by us and those who work with us, but also those who come into contact with the airport. Building a strong EHS culture will not only make our environment, health and safety performance world class, it will enable us to achieve improved performance, and provide a safe, healthy and enjoyable place to work.

MEASURING OUR SUCCESS

We will ensure both our leading and lagging key performance indicators drive the correct actions and behaviours. Our corporate (internal and external) EHS audits will seek to identify inappropriate controls before adverse consequence materialise. Actions taken in response will encourage a proactive culture. In focussing on underlying factors, we will pay particular attention to collating, trending and targeting actions based on incidents and near misses, and, where practicable, utilise safety improvement ideas prior to these incidents occurring.

SECTION 11 - AIRCRAFT NOISE INDUSTRY STAKEHOLDERS

CIVIL AVIATION AUTHORITY (CAA)

The Civil Aviation Authority (CAA) is the statutory corporation which oversees and regulates all aspects of civil aviation in the United Kingdom. It is a public corporation established by Parliament in 1972 as an independent specialist aviation regulator. One of its four environmental goals is to contribute to a cleaner and quieter aviation industry.

DEPARTMENT FOR TRANSPORT (DFT)

The Department for Transport (DfT) is the government department responsible for the English transport network and a limited number of transport matters in Scotland, Wales and Northern Ireland that have not been devolved.

It has put in place a long-term framework aimed at balancing the delivery of social and economic benefits from aviation, with the need to reduce and mitigate the environmental impacts of air transport and airport development.

DEPARTMENT FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS (DEFRA)

The Department for Environment, Food and Rural Affairs (DEFRA) is the UK Government department responsible for safeguarding the natural environment, supporting the UKs world-leading food and farming industry, and sustaining a thriving rural economy. DEFRA's broad remit means it plays a major role in people's day-to-day life, from the food they eat, and the air they breathe, to the water they drink.

NATS

NATS is a UK's provider of air traffic control services, handling 2.4 million flights and 250 million passengers in UK airspace per annum. NATS provides en-route air traffic control services to flights within the UK Flight Information Regions and the Shanwick Oceanic Control Area and provides air traffic control services to fourteen UK airports. NATS is split into two main service provision companies: NATS En-Route PLC (NERL) and NATS Services Ltd (NSL):

- NERL is the sole provider of civilian en-route air traffic control over the UK and is regulated by the CAA who, for example, determine the charges NERL can make. NERL is funded by charging airlines for the provision of air traffic services.
- NSL competes for contracts in the free market to provide air traffic control at airports in the UK and overseas, as well as providing related services including engineering, consultancy, information services and training.

The overarching guiding principle of air traffic control is that safety is paramount.

The airspace about our homes and places of work contain a network of corridors, or airways. They mainly link busy areas of airspace known as terminal control areas, which are normally above major airports like London Gatwick. All of these airways are designated "controlled airspace". Aircraft fly in them under the supervision of air traffic controllers at all times.

AIR NAVIGATION SOLUTIONS (ANS)

Since 1st March 2016 Air Navigation Solutions Ltd has been responsible for the tower air navigation service provision at Gatwick Airport.

The scope of the services to be provided are:

- Aerodrome air traffic control – including, air, ground movement control, delivery and all training;
- Air traffic engineering services – including safeguarding and other support services;
- Emergency and alerting services;
- Meteorological services.

ANS is a wholly owned subsidiary of the Deutsche Flugsicherung (DFS) and has been awarded a 10-year contract for the future provision of Air Traffic Control and Air Traffic Engineering Services at Gatwick Airport.

AIRLINES

Airlines and their flight crew have a duty to operate their aircraft in order to comply with the various rules and regulations stipulated for flying in UK controlled airspace. The commander of an aircraft has the primary responsibility for the safety of the crew and passengers at all times.

CRAWLEY BOROUGH COUNCIL (CBC)

As the airport's local planning authority, CBC ensure that the airport is compliant with all Section 106 planning obligations, some of which relate to aircraft operations.

WEST SUSSEX COUNTY COUNCIL (WSCC)

As the airport's local highway authority, WSCC, with CBC as the lead members of the Local Authority Gatwick Officers Group ensure that the airport is compliant with all Section 106 planning obligations, some of which relate to aircraft operations.

AVIATION ENVIRONMENT FEDERATION (AEF)

The Aviation Environment Federation (AEF) is the principal UK non-governmental organisation campaigning exclusively on the environmental impacts of aviation and promoting a sustainable future for the sector. It formed as a federation in 1975 at a time when the sector was beginning to grow rapidly and noise was becoming an issue around airfields and airports. As aviation is exempt from noise nuisance legislation its members sought action to influence the national policy level. AEF continues to focus on policy change but its work now extends beyond national policies to influencing European and global policy makers. Its work covers issues ranging from local air quality to global climate change, and from local participation in an airport consultative committees to the overall national economic impact of any new runway.

THE INDEPENDENT COMMISSION ON CIVIL AVIATION NOISE (ICCAN) – PROPOSED

This will produce guidance and best practice for making sure the process for taking airspace change decisions is trusted and transparent. To ensure this is happening, there will be a review of ICCAN within two years, to consider whether statutory powers are required.

SECTION 12 - COMMITTEES ATTENDED REGARDING AIRCRAFT NOISE

EXTERNAL COMMITTEES

GATWICK AIRPORT CONSULTATIVE COMMITTEE (GATCOM)

GATCOM is constituted to meet the requirements of Section 35 of the Civil Aviation Act 1982 for an airport "to provide adequate facilities for consultation with respect to any matter concerning the management or administration of the airport which affects the interests of users of the airport, local authorities and any other organisation representing the interests of persons concerned with the locality in which the airport is situated".

GATCOM aims to:

- Foster communication and build understanding between the airport and its users, local authorities and interest groups.
- Consider and comment upon the impacts of the airport's administration, operation and development in relation to:
    - The environment,
    - The passenger experience,
    - Surface access issues associated with the airport,
    - Employment,
    - The local, regional and national economy,
    - The circumstances of local communities and their residents.
- Consider and, if appropriate, respond to any factual or consultative reports, from Governmental or other sources, which are material to the operation or development of the airport.
- Make suggestions to Gatwick Airport Limited where this might further the interests of those represented.

The members of the committee are drawn from three broad groups:

- **Users**: travel and tourism industry, aviation industry including airlines, passengers.
- **Local authorities**: all those whose boundary abuts Gatwick Airport or the M23 spur road.
- **Local interest groups**: groups representing local people affected by the airport's operations including environmental and noise groups, business and economic groups and employees.

THE GATCOM STEERING GROUP

The Steering Group is composed of the Chairman and Vice-Chairman and ten other members of GATCOM reflecting the composition of interests of the main Committee. The role of the Steering Group is to give preliminary consideration to new or detailed matters to be dealt with by GATCOM and to identify the facts and major issues, and to make recommendations to GATCOM. The Steering Group also deals with urgent matters on behalf of GATCOM.

NOISE AND TRACK MONITORING ADVISORY GROUP

The aims of the Noise and Track Monitoring Advisory Group (NATMAG) are:

- To oversee the operation of the Gatwick Airport Limited's Flight Performance Team's system to ensure that the requirements of the local community are taken into account in respect of the production of statistics, information and complaint handling.
- To advise Gatwick Airport Limited on issues relating to noise and track monitoring which derive from the results obtained from the monitoring equipment.
- To assist Gatwick Airport Limited in seeking improvements to the noise climate and track-keeping performance around Gatwick.
- To provide information and recommendations regarding noise and track monitoring to the GATCOM via the GATCOM Steering Group.

GATCOM also has representation on this group.

NOISE MANAGEMENT BOARD

The core role of the Noise Management Board (NMB) is to develop, agree, oversee and maintain a co-ordinated noise management vision and subsequent strategies for Gatwick on behalf of stakeholder organisations. The main aim of this work is to reduce the impact of noise on the local community.

The Noise Management Board is made up of a wide range of industry experts and stakeholders. There are 13 seats on the Board, some of which are shared between a voting member and an alternate member who have one vote and actively attend alternate meetings. The NMB has representation from the airport, Civil Aviation Authority, Department for Transport, air navigation service providers, airlines, County Councils, the Gatwick Airport Consultative Committee and various community noise protest groups.

The Board is chaired by Bo Redeborn and the secretary is Graham Lake; both conducted and wrote the original Gatwick Airport Independent Arrivals Review.

GATWICK NOISE MONITORING GROUP

This is where local environmental health professionals and representatives from the environment departments of local authorities meet with the Airport to discuss the location of mobile noise monitors, the duration they are to be onsite and to review and verify the data.

This group also makes recommendations on the format the data should be reported to NATMAG and the wider community.

FLIGHT OPERATIONS PERFORMANCE AND SAFETY COMMITTEE

The Flight Operations Performance and Safety Committee (FLOPSC) ensures the development of best practice in flight operations by all airlines using Gatwick Airport in order to minimise their effect on the local community.

Matters discussed include departure track keeping, continuous descent operations and noise infringements. FLOPSC meets bi monthly and is attended by the Airport, air traffic control, airlines and a representative of GATCOM.

AIRCRAFT NOISE MANAGEMENT ADVISORY COMMITTEE

The Aircraft Noise Management Advisory Committee (ANMAC) was set up by the Department for Transport (DfT) to advise it on policy relating to aircraft noise at Heathrow, Gatwick and Stansted - these airports being 'designated' for the purposes of s.78 of the Civil Aviation Act 1982.

ANMAC's membership includes representatives from London Gatwick plus representatives from the other designated London airports, NATS, the Environmental Research and Consultancy Department (ERCD) of the Civil Aviation Authority, the Scheduling Committees and a representative of the consultative committee at each of the three airports.

AIRSPACE AND NOISE ENGAGEMENT GROUP

The Airspace and Noise Engagement Group (ANEG) acts as a formal channel of communication between the Department for Transport and airspace and airport noise stakeholders.

The ANEG covers all aspects of national airspace and airport noise policy development. It acts as a sounding board to identify, discuss and, where possible, resolve airspace and airport noise issues that impact on the work of the department. Discussions are at a strategic policy level. The ANEG does not debate or attempt to resolve individual local issues. The ANEG is also an open forum for members to share their own relevant airspace and airport noise projects.

ANEG members include representatives from each of:

- air navigation service providers
- airlines
- airports
- Aviation Environment Federation
- Civil Aviation Authority
- community groups
- express delivery industry
- general aviation
- local authorities
- aerospace manufacturers
- passenger organisations
- Sustainable Aviation
- UK airport consultative committees
- independent noise body (ICAAN when established)

S106 LEGAL AGREEMENT MEETINGS

We work closely with the local authorities close to Gatwick on social, environmental and economic matters. In 2001, Gatwick Airport signed a Section 106 (S106) legal agreement with West Sussex County Council and Crawley Borough Council (following consultation with seven other local authorities in the area). The agreement reflected a shared desire to see the airport grow, with measures in place to minimise as far as possible its short and long term impacts. The S106 was renewed for a further seven years in 2008 and in December 2015 it was extended until the end of 2018.

The agreement defines how Gatwick's operation, growth and environmental impacts will be managed responsibly and ensures that our wider sustainability strategy is aligned with local authority partners. It is considered as a best practice case in the UK by external stakeholders. The agreement underpins the important relationship between the airport owner and the local authorities with responsibility for planning, environmental management and highways.

To ensure delivery of our S106 obligations, and additional commitments that we have made on sustainable development, we maintain a set of ten action plans on topics covered by the S106 agreement and by our Decade of change sustainability strategy. The current action plans cover the period 2015-2018.

Performance against the S106 agreement is reported in the S106 Annual Monitoring Report which covers our actions to fulfil our obligations and commitments; and is also communicated to the Gatwick Airport Consultative Committee (GATCOM).

The airport meets with Crawley Borough Council and West Sussex County Council a number of times per year to discuss progress against the S106 Legal Agreement Obligations and Action Plan Actions and to discuss matters of mutual interest.

INTERNAL GROUPS

EXECUTIVE MANAGEMENT BOARD

This includes the Chief Executive Officer, the Chief Financial Officer and other members of senior management. The Executive Management Board meets monthly and is responsible for the day-to-day management of the Airport. In particular, the Executive Management Board has collective responsibility for assisting the Board of Directors in the performance of their duties for the Group including:

- the development and implementation of strategy, operational plans and budgets;
- the achievement of business plans and targets;
- the assessment and control of risk;
- ensuring compliance with legal and regulatory requirements; and
- the development and implementation of the Group's ethics and business standards and health, safety, security and environmental policies and procedures.

ENVIRONMENT HEALTH AND SAFETY AND OPERATIONAL RESILIENCE COMMITTEE

The Environment Health and Safety and Operational Resilience Committee is responsible for reviewing the Airport's strategy with respect to health and safety, operational resilience and business continuity. The Committee monitors the Group's performance against targets and drives management commitment and accountability with respect to managing risks.

(FUTURE) AIRSPACE & ATS DESIGN INTEGRATION PANEL (AADIP)

The purpose of this committee is to develop and review design and integration of options for future airspace routing/procedures of Gatwick Airport Ltd / NATS Air Traffic Services.

The panel will consider the strategic design and integration/development challenges.

- To guide development in the design and integration of Gatwick Airport Ltd/NATS Air Traffic Services.
- To help prioritise, coordinate and integrate service delivery.
- To consider airspace requirements and develop strategies for its acquisition and use.
- To develop coherent inputs to the Master Plan and Gatwick Airport Ltd.'s growth strategy.
- To input into the strategic engagement with third parties: NATS, CAA, Department for Transport policy and local communities.
- To provide strategic input into the Noise Management Board on options to further reduce the impact of Air Traffic Movements.
- To review proposed changes to Department for Transport policy, CAA regulation and Air Traffic Movements.

DECADE OF CHANGE WORKING GROUP

The purpose of the Decade of Change working Group is to improve transparency and efficient coordination around key Decade of Change deliverables, e.g. Decade of Change and Section 106 Action Plan Actions and reporting, certifications and new initiatives.

Key outcomes from this working group are improved audit results on Decade of Change issues and greater awareness of Decade of Change as a proactive driver in the business.

MANAGING CORPORATE RESPONSIBILITY

The role of the Managing Corporate Responsibility (MCR) Committee is to establish a systematic and aligned management approach to:

- Deliver the Company's strategy with respect to Environment, Health, Safety and Operational Resilience (EHSOR) and Sustainability;
- Monitor the Company's exposure to EHSOR and sustainability risks;
- Monitor the Company's performance against EHSOR and sustainability targets; and
- Encourage management commitment and accountability with respect to Company-wide EHSOR and sustainability initiatives, policies and procedures.

SECTION 13 – SUSTAINABLE AVIATION

Gatwick Airport Ltd is a 'Council' Member of Sustainable Aviation, is a long term strategy which sets out the collective approach of UK aviation to tackling the challenge of ensuring a sustainable future for the aviation industry. Launched in 2005, it is a world first bringing together major UK airlines, airports, manufacturers and air navigation service providers.

The industry is committed to delivering a sustainable future, and Sustainable Aviation is critical to delivering that. The signatories and members are focused on finding collaborative ways of improving environmental performance and creating a balanced debate to ensure sustainable growth of the aviation industry, which is crucial to the health of the UK's island trading economy.

Sustainable Aviation has set a range of goals and commitments covering climate change, local air quality and noise to deliver a sustainable future for the aviation industry. Sustainable Aviation regularly reports on the progress towards these objectives, monitoring and tracking the practical cooperative work being undertaken.

Sustainable Aviation is funded by its signatories who also provide technical expertise. The number of signatories continues to grow, with over 90 per cent of UK airlines, airports and air navigation service providers, as well as all major UK aerospace manufacturers represented.

SUSTAINABLE AVIATION AND AIRCRAFT NOISE

Sustainable Aviation's (SA) goal with respect to aircraft noise is to 'Limit and, where possible, reduce the impact of aircraft noise'. The Sustainable Aviation Noise Road-Map is published in support of this goal.

The Road-Map is structured as a toolkit for individual areas of the UK aviation industry to assess and implement measures to reduce noise from aircraft operations. It also helps inform stakeholders, including those making future strategic decisions in which aircraft noise is an issue.

The document sets out SA's projection of aircraft noise impacts from UK aviation. This projection is based on the UK Government forecasts of aviation demand-growth published in 2013. Together with SA's own assumptions concerning the deployment of technology, operational measures, land use planning, communication, community engagement activities and, where necessary, the use of operating restrictions.

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

SA believes that the number of people adversely affected by aircraft noise is influenced by a number of complex variables which combine to generate the total result as illustrated in Figure 4 overleaf.

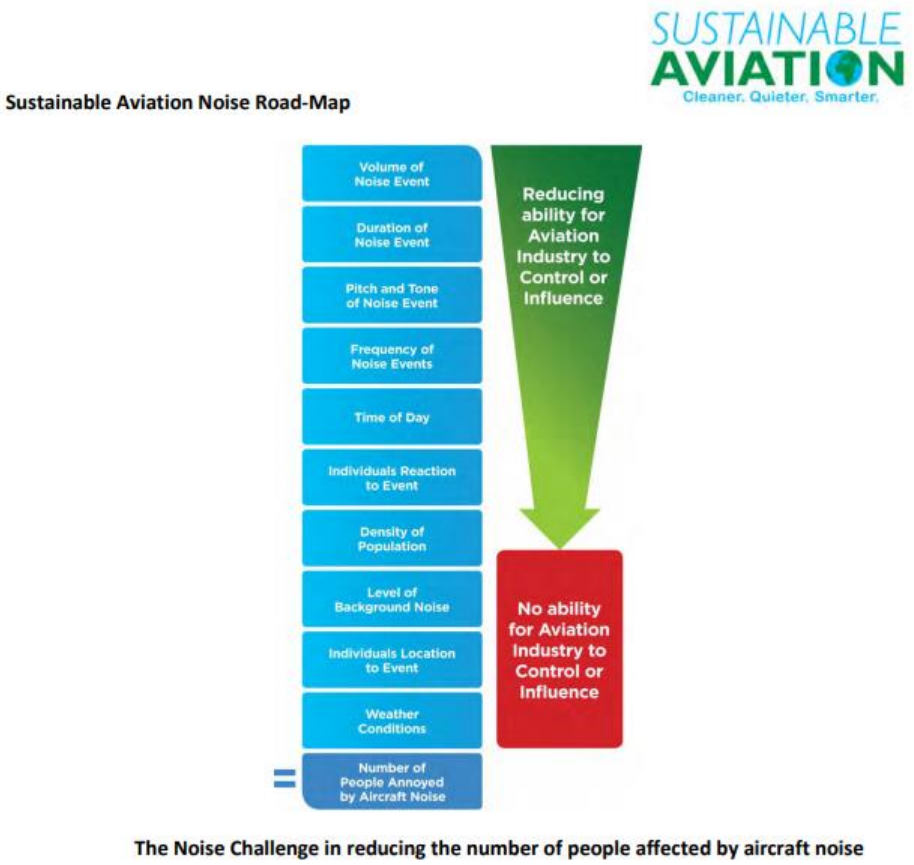


Figure 4: The challenges in reducing the number of people affected by aircraft noise from the SA Noise Road-Map

Three key conclusions arise from this diagram:

1. The number of people impacted by each variable is not consistent, for instance a loud aircraft event on a windy morning generally results in fewer people annoyed than the same aircraft event on a still, foggy morning.
2. While the aviation industry can take direct control of some of the variables, it has only indirect influence over others and no control at all over the remainder.
3. Research is required to understand in more detail the specific weighting and interrelationships each of the variables has on the final result.

In addition to these complexities, the nature of the noise problem can often change over time, even as a result of attempts to reduce its impact. For example, noise from departing aircraft was at one time the key area of concern among local communities. Technology solutions were developed to reduce departure noise, only for this to make arrival noise much more noticeable. Similarly, reducing the source noise of aircraft engines created a new focus on airframe noise, as that source then became dominant.

These unintended consequences of initiatives to reduce noise impact are common. There can be other unintended outcomes; reducing engine source noise often makes the engine heavier and therefore leads to additional fuel burn and emissions. Whilst a drive to concentrate noise impact on as few people as possible will obviously be better for those who escape it, but worse for the smaller communities that experience all of the noise.

This dynamic nature of noise problems, together with the risk of trade-offs and unintended consequences is at the forefront of the industry's mind in developing technologies and initiatives to limit and reduce noise impacts.

It makes the job of measuring, managing and reducing the number of people adversely affected by noise from aircraft very challenging. Unlike SA's Carbon Road-Map which used carbon dioxide emissions (CO_2), which are both easily measurable and with definable outcomes, measuring noise is more complex because of the multiplicity of noise metrics and human responses.

This Noise Road-Map therefore seeks to define future scenarios where best practice approaches can be used to limit and, where possible, reduce the number of people exposed to aircraft noise. To that end, the SA Noise Road-Map has been designed to identify and advocate best practice approaches to factors such as improved land use planning controls and community engagement as well as technology and operational advancements.

SA concludes that UK aviation is able to accommodate significant growth in air transport movements to 2050 and at the same time achieve a potential reduction to UK aviation's total noise output compared to 2010. The diagram below shows how the introduction of imminent and future aircraft and engine technology offers the potential to reduce UK aviation noise output by 2050 compared to 2010. Without this technology, given the forecast growth in demand for air transport, UK aviation's noise output would almost double.

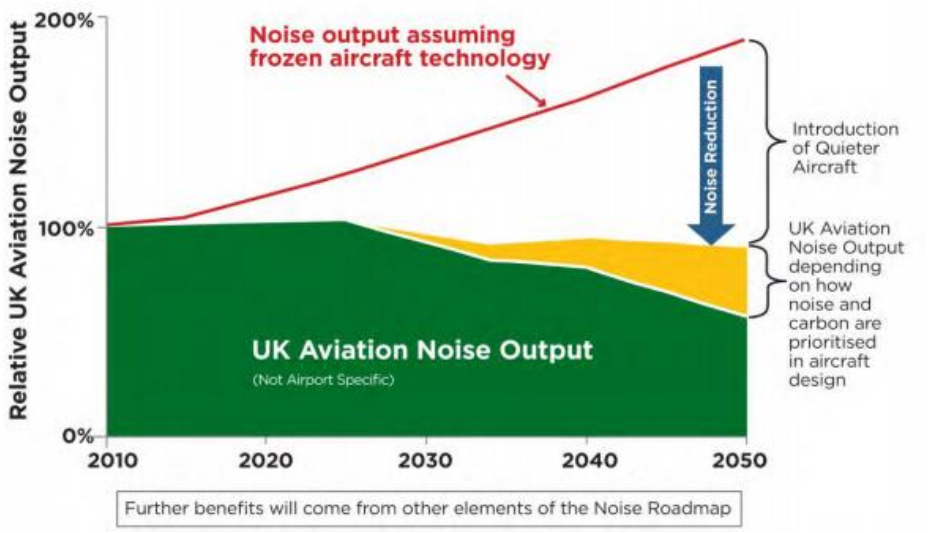


Figure 5: Sustainable Aviation (SA) Noise Road-Map

The graph shows an aggregated UK picture of noise output and how this is predicted to change between 2010 and 2050. The graph is not airport specific and cannot be read as the projection of noise output for any particular airport. This will depend on the aircraft types and rates of penetration of newer aircraft at individual airports.

Further improvements can be achieved through the wider implementation of operational improvements in the use of airspace and flying techniques and through better land use planning in the immediate vicinity of airports.

Developing the tools discussed in this Road-Map will require collaboration and co-ordination of efforts across the UK aviation industry, local and national Government along with national and local community groups. Responding to this, the SA signatory companies make the following commitments:

- SA members will use this Road-Map to develop best practice noise management strategies for the future.
- The Aerospace sector will continue to invest in aircraft technology research programmes.
- The Aerospace sector will work to achieve the visionary noise goals of Flightpath 2050 and CLEEN5.
- The industry will increase the use of existing operational techniques that reduce noise where safe and feasible.
- The industry will collaborate to explore and develop new operational techniques that reduce noise where safe and feasible.
- The industry will actively contribute to improving aircraft noise guidance in local planning policy.
- Airports will review masterplans to ensure they are consistent with Noise Action Plans.
- Airports will work with Government, local authorities and local communities to achieve identified land use planning improvements.
- The industry will promote open and transparent engagement with communities affected by noise, to better understand their concerns and priorities and to establish trust in the engagement process.
- The industry will ensure that any changes to noise impacts or noise mitigation efforts are clearly communicated through agreed channels in a timely and non-technical manner.
- The industry will present the best practice engagement mechanisms from the Road-Map to local stakeholders through channels such as consultative committees to help airport operators better evaluate their engagement techniques.
- The industry will work with Government and other stakeholders to identify and resolve research gaps in:
    - how the variables in the 'Noise Challenge' diagram are weighted and consult on whether a more accurate model can be developed to predict the number of people annoyed by aircraft noise under various 'what if' scenarios,
    - understanding of individual reactions to aircraft noise,
    - noise acceptability vs. noise annoyance and
    - a basis for better noise metrics.

SA requests the UK Government to:

- Support research and development in aerospace technology ensuring the right incentives are in place to enable uptake by the industry.
- Work with the aviation industry to clarify relative environmental impacts between reducing noise and CO2 emissions to enable future aeronautical design priorities.
- Strengthen and support local authorities' ability to enforce land use planning controls around airports.
- Implement improved airspace structures and operational procedures through the CAA.
- Work with the industry to support independent research to improve our understanding of the noise challenge and how people react to aircraft noise events.
- Work with the industry, local authorities and communities to optimise noise communication, monitoring and reporting processes.
- Ensure that operating restrictions are employed only as a last resort after full consideration has been given to the other dimensions of the ICAO Balanced Approach, namely reduction of noise at source, land use planning and management and noise abatement operational procedures.

SECTION 14 – THE NEED FOR AIRSPACE MODERNISATION

Airports rely on the effectiveness of the airspace that surrounds them to permit efficient operating procedures, and to minimise the environmental impact of operations. Our airspace safely handles over two million flights every year but it has remained little changed in over 50 years and is now in urgent need of modernisation. The airspace above the south-east of England was designed around procedures and infrastructure designed in the 1960's and is rapidly approaching the limit of its capacity. Not only does it contain choke points, but the use of legacy solutions, such as holding 'stacks' and movement limits, compound delays, increases operating costs and intensifies environmental impacts.

Designed over 50 years ago, for an industry vastly different in scale to the one we have today, it was never envisaged that our airspace would eventually handle more than two million aircraft and carry 250 million passengers, as it did in 2015. Many, including the Department for Transport, forecast that passenger demand will grow by a further 30% before 2030, with 3.1 million aircraft carrying 350 million passengers necessitating an additional 1 million aircraft movements per year. The boosts to trade and tourism from this growth are substantial, but if no action is taken it is expected that the current, ineffective design will lead to more than 1 in 3 flights being delayed by at least 30 minutes. It is widely recognised in government and across the aviation industry that urgent action is needed. We need to modernise our invisible infrastructure without further delay.

That means moving from traditional ground-based beacons to modern satellite navigation, the capability for which already exists on many modern aircraft. The UK is at the forefront of aerospace technological development, and since 2005 UK airlines alone have introduced over 470 new aircraft into service, representing an investment of over $49 billion. We now need to modernise our airspace to match. It will improve safety and increase efficiency and capacity whilst minimising the impact on the global environment and benefitting communities under flightpaths.

Through better operating procedures, that can be utilised with a modern airspace structure, there is a potential carbon saving to UK aviation by 2050 of between 9% and 14% and alongside the introduction of quieter aircraft 'the potential to reduce UK aviation noise output by 2050 compared to 2010' according to Sustainable Aviation. Aircraft can fly more directly and routes can be designed to avoid noise sensitive areas or provide a more equitable spread of noise as aircraft are not constrained by ground-based aids.

In essence, aircraft would be able to fly quieter and more efficient routes by greater utilising Continuous Descent and Climb operations which reduce noise and CO_2 emissions. New technology will also reduce the need for conventional orbital holding. It will also benefit the UK economy. Airspace modernisation across Europe will deliver over £29bn to UK GDP and 116,000 jobs by 2035 (IATA, 2016), as well as improving productivity. Without it, delays faced by passengers are likely to soar to 4 million minutes by 2030, up from 90,000 minutes in 2015 (NATS, 2015).

There will also be benefits to business and leisure fliers. Simpler airspace structures and boundaries will improve safety; and implementing continuous climb and descent operations for commercial air traffic has the potential to release some lower levels of controlled airspace.

FUTURE AIRSPACE MODERNISATION AT GATWICK AIRPORT

In July 2017 the Department for Transport directed NATS to re-energise the work on the Future Airspace Strategy for the southern half of the UK. This will include a fundamental redesign of the en-route airspace and the London Terminal Management Area (LTMA) along with refreshed airport specific procedures, by 2024. The Industry does not underestimate the size and complexity of this challenge. This programme will require the integration of NATS-led changes with parallel airport-led airspace changes and will constitute the single biggest airspace change in the UK. Gatwick Airport embraces the opportunity this programme presents and is helping to shape the programme's design and identify how risks can be shared and mitigated.

Gatwick Airport envisages the new airspace design will utilise Performance Based Navigation (PBN) solutions. PBN will not only allow improved avoidance of noise sensitive areas around airports on departure, but also enable more predictable routing options for arriving aircraft. Additionally, it is anticipated that the use of new technology will allow for more accurate management of arriving flights and so improve the efficiency of the runway operation.

Other design concepts that are expected to be adopted will permit aircraft to climb more steeply and more consistently to their cruising altitudes. This should create smaller noise footprints and decrease the noise levels experienced by some communities. Similarly, arriving flights will be able to make more direct, and continuous descents, saving distance, reducing emissions and reducing their noise and visual impact.

Gatwick Airport considers airspace redesign to be of the highest importance and as a result is actively investing time and resources to assist with the process and seek solutions that will deliver operational and environmental improvements. The airspace redesign will require the airport to update its departure and arrival procedures so that these link seamlessly with the upper airspace network in a considerate and environmentally sensitive manner.

The redesign of the wider airspace will be led by NATS and airspace operators; this will necessitate public consultation on the process and it is envisaged that this will happen during the latter part of 2018. Once there is sufficient clarity on the emerging airspace designs, Gatwick Airport can carry out its own public consultation with the local communities, on the options for connecting Gatwick's approach and departure routes to the updated airspace concept/s. This will provide the opportunity to address local concerns and seek to identify the optimum operational and environmental solutions.

INTERACTION WITH THE NOISE MANAGEMENT BOARD

Gatwick Airport also expects that the airspace change will allow the airport to deliver aspects of the Noise Management Board Action Plan that have the potential do deliver a meaningful improvement in the noise environment. The intent is to engage all parties at the earliest opportunity, explain how change will be managed under the new airspace change process, and to work with the communities to align on what must, should and could be changed.

While this process will place a major burden on the resources of all stakeholders, the airport sees this as a unique opportunity to modernise a key piece of national infrastructure. If successful there will be more efficient flight operations, with less fuel burn and less delays, along with meaningful noise benefits for local communities. The process will follow the new airspace change process being introduced by the Civil Aviation Authority which requires increased transparency and community engagement. The Noise Management Board will play an important role in the successful completion of this process.

SECTION 15 – DETAILS OF CURRENT NOISE ASSISTANCE SCHEMES

NOISE INSULATION SCHEME

The current Noise insulation Scheme was launched in 2014. This scheme was expanded significantly from the previous version covering 1,000 more properties in areas across Surrey, West Sussex and Kent.

The major changes to the scheme are two-fold. First the noise boundary for the scheme has increased by using a lower level of noise from 66 L_{eq} to 60 L_{eq} as a baseline with the boundary line drawn flexibly to ensure entire roads and communities are included. Secondly, the noise contour boundary has been drawn along the flight paths by 15km to both the east and west of the airport.

Gatwick Airport Ltd offered all local households eligible for the previous scheme the opportunity to comment and feedback on it before designing the new scheme, as well as local authorities and the Gatwick Airport Consultative Committee (GATCOM).

All eligible households were notified in writing of their eligibility and can receive up to £3,000 plus VAT towards acoustic insulation.

The Noise Insulation Scheme boundary can be viewed in Annex 7.

HOME OWNER SUPPORT SCHEME

Where land and property values are affected by new infrastructure, such as an airport development, property owners are not usually able to apply for compensation until a year after the new runway comes into use, when owners can seek compensation for the loss in the value of their property under the land Compensation Act 1973.

In the event that a second Gatwick runway goes ahead, it is likely to be many years before any runway would be open. In the meantime, there is no legal obligation to provide any support, although property values could be affected in the years before the development opens.

In these intervening years, it is recognised that an assurance of this later statutory compensation is not always enough to keep a property marketable. To allow for this, certain owner-occupiers have an entitlement in law to serve a Blight Notice, allowing them to require the promoter to purchase their property. These provisions only apply in tightly defined circumstances, and are set out in Schedule 13 of the Town and Country Planning Act 1990.

In order to support the local property market in the years before eligible property owners can receive any statutory support, we have developed a voluntary scheme. At the heart of the scheme is a fully transferable Home Owner Support Scheme (HOSS) Option Agreement. This will allow eligible property owners to require Gatwick to purchase their property for its unblighted market value (as if no runway development had been proposed) if and when Gatwick announces the intention to proceed with construction (having received planning permission).

The Home Owner Support Scheme aims to do four things to support the owners of properties which, if the development went ahead, would be newly exposed to medium-to-high levels of noise (66 decibels L_{eq}):

First, to make sure that affected properties can be bought and sold at normal market rates in the years before any development takes place. This is to counter any negative impact on property prices caused by the Government's proposals for possible runway development.

There are then two schemes for those people who want to move before they can require Gatwick to buy their property:

Once Gatwick announces its intention to apply for planning permission for a new runway, the scheme will allow property owners who wish to move, and have been unable to sell the property for a price within 15% of the prevailing market value, to sell their property to Gatwick at an unblighted price. We are calling this **Early Movers' Home Purchase**.

Once Gatwick announces its intention to apply for planning permission for a new runway, the scheme will provide property owners who wish to move and who are able to sell their properties for a price within 15% of the index-linked option price, with a contribution to sale costs of up to 5% of their property's sale price to property owners. We are calling this **Early Movers' Contribution to Sale Costs**.

Finally, if we receive planning permission for a new runway and once we announce our intention to begin construction, the scheme will enable property owners to sell their property to Gatwick at an unblighted price, without any loss of value threshold.

Our voluntary scheme means that people **will not have to wait until any new development has opened for any support or assistance** against blight, as they would usually have to if Gatwick only fulfilled its legal obligations.

The scheme applies to the area where properties will be newly exposed to medium-to-high levels of noise, resulting from a new runway at Gatwick. The area covered by the 66-decibel L_{eq} noise contour for a second runway has been forecast by the Civil Aviation Authority's Environmental Research and Consultancy Department. The scheme will only apply to properties which would fall within a 66-decibel L_{eq} noise contour for a new runway and are not currently within a 66-decibel L_{eq} noise contour for the existing airport.

A map of the area is enclosed in Annex 7. The area is defined by where a new runway would be sited.

We recognise that when we finalise the details of the new runway, the 66-decibel L_{eq} contour could change. If this happens we will extend the scheme to include any properties which fall inside the revised contour. We will also honour inclusion in the scheme for any properties that were inside but then fall outside the boundary.

PROPERTY MARKET SUPPORT BOND

Where land and properties need to be bought by a public body, statutory undertaker or infrastructure provider (such as Gatwick), the law allows that organisation to apply for a Compulsory Purchase Order, normally during the planning application process or after planning approval has been given.

Under a Compulsory Purchase Order, the land and property have to be bought by the developer at a fair, unblighted market price (i.e. as if no development had been proposed and no reduction in value had occurred). Eligible property owners are therefore guaranteed compensation under law for less of their property. However, this compensation is only paid once the developer has bought the property.

In the event that a second Gatwick runway goes ahead, it is likely to be many years before planning approval is granted and properties will have to be bought. In the meantime, there is no legal obligation to provide any support, although property values could be affected in the years before Compulsory Purchase Orders are granted.

In order to support the local property market in the years before eligible property owners could receive any statutory support, we have developed a voluntary scheme, which aims to do two things:

First, to make sure that properties in the area where land would be needed for any new runway development can be bought and sold at normal market rates in the years before any development takes place. This is to counter any negative impact on property prices caused by the Government's proposals for possible runway development.

Second, to enable people who take part in the scheme to sell their property to Gatwick, if Gatwick announces its intention to apply for planning permission for a second runway. We stand by our legal agreement that precludes runway construction before August 2019 and it consequently seems unlikely that such an announcement would need to occur much before 2012, and might be some years later than that.

Our voluntary scheme means that people won't have to wait until planning permission is granted for any support or compensation against blight, as they would generally have to if Gatwick only fulfilled its legal obligations. The scheme applies to the area where land would be required by Gatwick for a new runway development. We indicate this area in the map in Annex 7.

SECTION 16 - EVALUATING THE NOISE ACTION PLAN

We use a set of performance indicators to monitor and assess the effectiveness of our plan. Our performance against these indicators is regularly reviewed internally through our environmental governance structure and reported quarterly to the Noise and Track Monitoring Advisory Group (NaTMAG). An annual performance report is also presented to the Gatwick Airport Consultative Committee (GATCOM).

Set out below is a series of key performance indicators which we publish annually through our S.106 Annual Monitoring Report and Flight Performance Team reports. Certain KPIs are also published within the Decade of Change Annual Report and is subject to independent audit. We have included historical figures for the 'Round One' noise mapping for 2006 together with 'Round Two' for 2011 and the most recent 'Round Three' in order to set a baseline for this Noise Action Plan and to monitor progress.

Figure 6: Key Performance indicators to evaluate the Noise Action Plan

Key Performance Indicator	Round 1 2006	Round 2 2011	Round 3 2016
Percentage of Chapter 4 (or equivalent) aircraft	3%	96%	99%
Percentage of Chapter 14 aircraft[5]	-	-	-
Area inside the 55dBA L_{den} contour (km^2)	94.5km^2	85.6km^2	104.9km^2
Area inside the 48dBA L_{night} night-time (winter & summer seasons combined) contour (km^2)	41.3km^2 *2003 figure	34.1km^2	73.2km^2
Area inside the 57dB $L_{Aeq\ 16\ hour}$ daytime summer contour (km^2)	46.7km^2	40.4km^2	44.2km^2
Average quota count of aircraft operating during the night quota period (2330-0600)	0.82 Winter 2005/6 0.71 Summer 2006	0.65 Winter 2011/12 0.53 Summer 2011	0.59 Winter 2016/17 0.44 Summer 2016
Number of infringements of the daytime departure noise limit Number of infringements of the shoulder and night period	9 2	0 4	0 1
Percentage of aircraft achieving a CDO (24 hour period)	81.0%	90.5%	88.6%
Percentage of aircraft achieving a CDO Day / Shoulder period	79.9%	90.2%	88.2%
Percentage of aircraft achieving a CDO during the core night period	89.6%	94%	93%
Percentage of departing aircraft on-track (all routes)	98.2%	97.4%	98.6%
1,000ft Infringements (No.)	11	3	0
1,000ft Infringements (No. below 900ft)	6	1	0
Number of individual callers making noise related enquiries	587	343	2,324
Total noise complaints received	4,791	2,673	17,715
Percentage of noise related enquiries responded to within eight working days	94.5%	98.4%	46.6%

[5] In 2017, 39% of aircraft movements at Gatwick were billed at the Chapter 14 noise standard. Of these, 63% were in the quietest noise categories, Chapter 14 Base and Chapter 14 Minus

Figure 7: Airport Traffic Statistics

Traffic Statistics	2006	2011	2016
Total aircraft movements	262,832	251,068	280,089
West / east runway split	68/32	67/33	67/33
Total passengers	34,384,000	33,660,146	43,136,800
Night quota movements summer	7,749.5	9,859	11,303
Night quota movements winter	1,355.25	1,411	2,022

As a way of measuring the success of the revised noise action plan we have identified a number of expected outcomes. These are also set out below:

- No operations in 2024 by Chapter 3 aircraft.
- At least 80% of aircraft movements by Chapter 14 or equivalent aircraft by 2024.
- Performance against the noise abatement procedures in the UK Aeronautical Information Publication (AIP) will consistently be maintained and where practicable improved against a 2016 baseline.
- No daytime infringements against 94dB (A) daytime departure noise limit.
- 24 hour CDO achievement of no less than 90%.
- Track Keeping of no less than 98%.
- The 48dB (A) 6.5 hour night contour (winter and summer combined) will be within 47km^2.

The Flight Performance Team, along with other relevant Gatwick Teams track performance against these outcomes and report on progress within the quarterly and annual reports. Additional information is provided in Section 18.

SECTION 17 – RESULTS OF THE 2016 NOISE MAPPING

Gatwick Airport has, for many years, had an extensive noise management system in place and has annually produced summer L_{Aeq} 16 hour day contours. Therefore, the results of the 2017 noise mapping of 2016 do not raise any significant new issues. Traditionally our approach to noise management has contained actions aimed at addressing areas outside of these contours and, additionally, ground noise. As stated above, the actions contained within this revised plan will continue to adopt this approach.

The location of Gatwick Airport and the alignment of the main and standby runways mean that aircraft arrive and depart mostly over lightly populated rural areas. The alignment of the main runway means that residents of areas such as Lingfield to the east of the airport and Okewood Hill to the west are impacted by the airport's operation. Gatwick Airport has witnessed steady growth over recent decades, handling approximately 275,633 runway movements in 2016 compared to 220,000 in 1996.

The prevalence of westerly winds means that approximately 70% of aircraft arrivals come from the east and around 70% of departures are to the west however this figure does fluctuate.

There are four departure routes (noise preferential routes - NPRs) to the east of Gatwick and five to the west. The L_{den} maps indicate the impact of these NPRs particularly to the west where the departure routes form a spur in the 55dB L_{den} contour over Capel and the surrounding area.

For aircraft arriving at Gatwick the contour is influenced by arrivals from the east where the 55dB Lden contour extends over Lingfield, Marsh Green and Hever. The impact of departures is less marked on the L_{night} contour map reflecting that the night period typically consists of scheduled arrivals.

Detailed below, overleaf and in Annex 3, are the results of the 2016 noise mapping, showing the estimated number of people and dwellings exposed above various noise levels. This data has been sourced directly from the data pack provided to us by DEFRA. We have included data from L_{day}, $L_{evening}$, L_{night}, L_{den} and L_{eq} noise contours. We considered these results and our current noise mitigation measures in revising this noise action plan.

The number of dwellings has been rounded to the nearest 50, except when the number of dwellings is greater than zero but less than 50, in which case the total has been shown as '<50'.

The associated population has been rounded to the nearest 100, except when the associated population is greater than zero but less than 100, in which case the total has been shown as '<100'.

Figure 8: Estimated Total Number of People and Dwellings above Various Noise Levels, L_{den}

Noise Level (Db)	Number Of Dwellings	Number Of People
≥ 55	5,450	13,500
≥ 60	950	2,300
≥ 65	250	600
≥ 70	<50	<100
≥ 75	0	0

Figure 9: Estimated Total Number of People and Dwellings above Various Noise Levels, L_{day}

Noise Level (Db)	Number Of Dwellings	Number Of People
≥ 54	4,000	9,800
≥ 57	1,350	3,200
≥ 60	550	1,400
≥ 63	250	600
≥ 66	50	200
≥ 69	<50	<100

Figure 10: Estimated Total Number of People and Dwellings above Various Noise Levels, $L_{evening}$

Noise Level (Db)	Number Of Dwellings	Number Of People
≥ 54	3,300	8,000
≥ 57	900	2,100
≥ 60	450	1,000
≥ 63	150	400
≥ 66	<50	100
≥ 69	0	0

Figure 11: Estimated Total Number of People and Dwellings above Noise Levels, $L_{aeq, 16H}$

Noise Level (Db)	Number Of Dwellings	Number Of People
≥ 54	3,850	9,400
≥ 57	1,200	2,900
≥ 60	550	1,300
≥ 63	200	600
≥ 66	50	200
≥ 69	<50	<100

Figure 12: Estimated Total Number of People and Dwellings above Various Noise Levels, L_{night}

Noise Level (Db)	Number Of Dwellings	Number Of People
≥ 48	3,650	9,000
≥ 51	1,150	2,800
≥ 54	500	1,100
≥ 57	200	500
≥ 60	50	200
≥ 63	<50	<100
≥ 66	0	0

METHODOLOGY FOR CALCULATION OF POPULATION AND DWELLING EXPOSURE STATISTICS

In order to derive the statistics presented in this section, analysis has been undertaken to count the population and number of dwellings within the specified noise contours. This assessment was carried out utilising a strategic residential population location dataset. The following paragraphs summarise the method used in constructing this dataset.

Residential dwellings and buildings containing residential dwellings were identified through the 2015 (OS) AddressBase Premium and Topography layer respectively. An average population per residential dwelling was calculated for each discrete dwelling utilising population data attained from the mid-year population estimates from the Office of National Statistics (ONS), June 2015.

The total number of residential dwellings and the total associated population were calculated for each residential building polygon, taking into account building polygons with multiple dwellings. Examples of building polygons containing multiple dwellings located within a single polygon include tower blocks and apartments.

The previous noise mapping from 2011 and 2006 is provided within Annex 10 for the purposes of allowing comparisons to be made.

SECTION 18 – OUR NOISE ACTION PLAN

Over the following pages are the individual actions that make up this Noise Action Plan.

Figure 13: Our Noise Action Plan actions, impact areas, benefits, performance indicators, reporting and targets

Quiet Fleet							
ACTION	IMPACT AREA	NOS AFFECTED[6]	EXPECTED BENEFIT AND COST	PERFORMANCE INDICATOR, AND REPORTING	EXTERNAL SUPPORT REQUIREMENT	TIMESCALE	TARGET
1. We will maintain a charging differential in our published airport charges which incentivises the use of aircraft with the best in class noise performance.	Arrivals, Departures and Ground	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** Increased use of the quietest and cleanest Chapter 14 certified aircraft at Gatwick. These aircraft are 7 EPNdB quieter than Chapter 4 and 10 EPNdB than Chapter 3. **Cost:** Airline fleet replacement.	**Indicator:** Fleet mix including % of Chapters 4 and 14 Aircraft. **Reported:** Quarterly to NaTMAG.	Use of established airline engagement forums and channels.	On-going	By 2024, 90% of movements are by Chapter 14 aircraft.
2. We will continue to apply and report upon charging penalties to those aircraft operators of Airbus A320 family aircraft that have not had the Fuel Over Pressure Protector (FOPP) modification retrofitted.	Arrivals, Departures and Ground	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** Use of FOPP modified A320 family aircraft, a modification which can deliver arrivals noise reductions of up to 9dB. **Cost:** Airline fleet modification.	**Indicator:** Percentage of A320 fleet retrofitted or delivered with modification in place. **Reported:** Quarterly to NaTMAG.	Use of established airline engagement forums and channels.	On-going	By 2020, 99% of all A320 family flights are by FOPP modified aircraft.
2a. If additional aircraft or manufacture specific noise defects which can be rectified by a modification are identified (similar to the FOPP) we will seek to identify, consult and implement corresponding charging penalties.	Arrivals, Departures and Ground	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** Identification and rectification of potential fleet/aircraft specific noise issues. **Cost:** Airline fleet modification.	**Indicator:** To be decided based upon any potential issues identified. **Reported:** Quarterly to NaTMAG.	Use of established airline engagement forums and channels.	On-going	To be decided based upon any potential issues identified.

[6] The number of people affected by each action has been based upon an estimate of the area of impact correlated to the strategic noise mapping provided by DEFRA. In cases where the impact contour estimate does not correlate with the specific contours in the DEFRA mapping, the next contour down has been used to maintain a conservative approach.

Quiet Fleet							
	ACTION	**IMPACT AREA**	**NOS AFFECTED[6]**	**EXPECTED BENEFIT AND COST**	**PERFORMANCE INDICATOR, AND REPORTING**	**EXTERNAL SUPPORT REQUIREMENT**	**TIMESCALE**	**TARGET**
3	We will review the landing fee differential at least every five years.	Arrivals, Departures and Ground	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** As above for Action 1. **Cost:** As above for Action 1.	**Indicator:** Review of the landing fees. **Reported:** Online publication of the Conditions of Use.	Use of established airline engagement forums and channels.	5 yearly	Publication of revised conditions of use.
4.	Gatwick Airport Ltd will consult with its airline partners annually regarding the Airport Charges Structure. The Noise Management Board will also be asked for its feedback.	Strategic Approach	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** As above for Action 1. **Cost:** As above for Action 1.	**Indicator:** Review of the airport charges structure. **Reported:** Online publication of the Conditions of Use.	Use of established airline engagement forums and channels.	Annually	Annual publication of revised conditions of use.
5.	In conjunction with our airline partners we will seek to re-introduce, by the end of this Noise action Plan period a programme that will rank our airline partners in relation to their overall performance for a range of noise and any other appropriate topic potentially including, but not limited to metrics such as compliance with abatement techniques, fleet age, engine fit and passenger loads per km.	Arrivals, Departures and Ground	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** Continual operational improvement in noise and emissions by providing a public facing league table whilst also providing clear and transparent information to stakeholders. **Cost:** Development and ongoing management of the league table along with airline engagement to drive improvements.	**Indicator:** Introduction and publication of the Gatwick airline league. **Reported:** Progress prior to implementation will be reported to the NMB. Once prepared the table will be reported regularly.	Use of established airline engagement forums and channels.	2019	Implement, publish and regularly update the league table.

Night Time Operations							
ACTION	**IMPACT AREA**	**NOS AFFECTED[6]**	**EXPECTED BENEFIT AND COST**	**PERFORMANCE INDICATOR, AND REPORTING**	**EXTERNAL SUPPORT REQUIREMENT**	**TIMESCALE**	**TARGET**
6. We will continue to administer the Department for Transport night flight regime and ensure that we operate at night within the prescribed ATM and QC limits.	Night flights	Communities within and beyond 48dB Lnight (in excess of 9,000)	**Benefit:** Incentivise the use of the quietest aircraft in the night period through the application of the DfT's night flight regime with reduced QC limits and a new QC category. **Cost:** Implementation of the revisions and ongoing management of the regime.	**Indicator:** Application of and management of the revised DfT night flight regime. **Reported:** Regularly to the DfT and quarterly to NaTMAG.	Program managed by GAL with oversight provided by DfT using established process.	On-going	Controlled management of night flights in accordance with the DfT program.
7. We will report on a quarterly basis to the Noise and Track Monitoring Advisory Group the number of flights delayed from planned daytime arrival into night movements (after 23:30 local).	Night flights	Communities within and beyond 48dB Lnight (in excess of 9,000)	**Benefit:** Increased awareness of delayed arrivals allowing for proactive action to be taken within Action 8. **Cost:** Management, data analysis and reporting on the regime.	**Indicator:** Off-schedule performance statistics for aircraft affected. **Reported:** Quarterly to NaTMAG.	Engagement and participation with NaTMAG, an established group.	Quarterly / Annually	Report off-schedule flights which are delayed into the night period.
8. We will, as far as is practicable, take all necessary steps to manage the late running of aircraft to prevent scheduled day movements taking place during the sensitive night period.	Night flights	Communities within and beyond 48dB Lnight (in excess of 9,000)	**Benefit:** Reduction in the number of late running aircraft, planned for the daytime, operating in the sensitive night period. **Cost:** Management, data analysis and reporting on the regime. Actions taken could result in the potential cancellation of flights.	**Indicator:** The number of off-schedule flights which are delayed into the night period. **Reported:** Airside operations and airlines.	Use of established airline engagement forums and channels.	On-going	Minimise as far as possible, the number of off-schedule flights which are delayed into the night period.
9. We will implement a voluntary ban on operations of Quota Count 4 aircraft within the core night period by the end of 2022.	Night flights	Communities within and beyond 48dB Lnight (in excess of 9,000)	**Benefit:** Incentivise the use of the quietest and cleanest aircraft in the night period. **Cost:** Airline fleet replacement.	**Indicator**: Number of QC/4 aircraft operating in the night period. **Reported:** Quarterly to NaTMAG.	Use of established airline engagement forums and channels.	2022	Implement a voluntary ban by 2022.

Ground Noise Control							
ACTION	**IMPACT AREA**	**NOS AFFECTED[6]**	**EXPECTED BENEFIT AND COST**	**PERFORMANCE INDICATOR, AND REPORTING**	**EXTERNAL SUPPORT REQUIREMENT**	**TIMESCALE**	**TARGET**
10. We will continue to monitor adherence to and review the effectiveness of our ground noise operational controls.	Ground	Communities within and beyond 65dB Lden (in excess of 600)	**Benefit:** Continual reduction in ground noise and emissions from engine testing and APU running in accordance with our S106 agreement. **Cost:** Management, data analysis and reporting on the operational controls.	**Indicator**: Publication of Gatwick Airport directives pertaining to Auxiliary power unit usage and audit findings reports. **Reported:** Quarterly to NaTMAG.	Engagement and participation with NaTMAG, along with an airline/ground handler education program on ground noise controls.	On-going	Maintain effective ground noise operational controls.
11. We will report on a quarterly and annual basis the following: • Fixed Electrical Ground Power availability. • The amount of Ground Power Unit dispensations granted. • The number of audit checks of aircraft auxiliary power unit running. • The number of non-compliances of aircraft auxiliary power unit runs identified. • The number of aircraft engine runs undertaken.	Ground	Communities within and beyond 65dB Lden (in excess of 600)	**Benefit:** Continual reduction in ground noise and emissions. **Cost:** Management, data analysis and reporting on the operational controls.	**Indicator**: Quarterly Ground noise monitoring reports. **Reported:** Quarterly to NaTMAG and annually in the Section 106 Annual Monitoring Report.	Engagement and participation with NaTMAG, an established group along with an airline/ground handler education program on ground noise controls.	On-going	Maintain effective ground noise operational controls.
12. We will continue to minimise aircraft auxiliary power unit use in order to reduce ground noise and local air quality emissions via Gatwick Airport Directives and monitoring of compliance.	Ground	Communities within and beyond 65dB Lden (in excess of 600)	**Benefit:** Continual reduction in ground noise and emissions. **Cost:** Management, data analysis and reporting on the operational controls.	**Indicator**: Quarterly Ground noise monitoring reports. **Reported:** Quarterly to NaTMAG and annually in the Section 106 Annual Monitoring Report.	Engagement and participation with NaTMAG, along with an airline/ground handler education program on ground noise controls.	On-going	Maintain effective ground noise operational controls.

Arriving Aircraft							
ACTION	IMPACT AREA	NOS AFFECTED[6]	EXPECTED BENEFIT AND COST	PERFORMANCE INDICATOR, AND REPORTING	EXTERNAL SUPPORT REQUIREMENT	TIMESCALE	TARGET
13. We will continue to promote adherence to the Arrivals Code of Practice through groups such as FLOPSC, Sustainable Aviation and other engagement events.	Arrivals	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** Continual improvement in operational practices leading to a reduction in arrivals noise and emissions. **Cost:** Airline engagement and operational improvement facilitated by GAL and NATS.	**Indicator**: Quarterly and Annual FPT reports covering metrics such as CDO performance etc. **Reported:** Quarterly to FLOPSC and NaTMAG.	Engagement and participation with established forums (FLOPSC and SA) along with direct airline engagement where required.	On-going	Share code of practice with all new airlines.
14. We will continue to promote, monitor, seek to improve and report on adherence to the arrival noise abatement procedures detailed in the London Gatwick Aeronautical Information Publication.	Arrivals	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** As above for Action 13. **Cost:** As above for Action 13.	**Indicator**: Quarterly and Annual FPT reports covering metrics such as CDO performance etc. **Reported:** Quarterly to FLOPSC and NaTMAG.	Engagement and participation FLOPSC, an established forums along with direct airline engagement where required.	On-going	By 2020 provide, adherence data to airlines on a regular basis to drive continuous improvement.
15. In conjunction with Sustainable Aviation, Gatwick Airport will identify a low noise arrival procedure which will capture Low Power Low Drag measures and result in a metric which will supplement Continuous Descent Operations as an additional measurable target.	Arrivals	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** Introduction of a new, low noise target across the UK, for airlines to enable additional reductions in arrivals noise. **Cost:** The initial study (funded by the Future Aviation Strategy) along with airline training and continual engagement and operational improvement facilitated by GAL and ATC personnel.	**Indicator**: Project progress reports. **Reported:** Reported and tracked by Sustainable Aviation[7].	Program management by Sustainable Aviation with funding from the Future Aviation Strategy.	2019	Implement the low noise arrivals metric at Gatwick.

[7] The use of a low noise arrivals metric was first proposed by the Noise Management Board. To enable maximum uptake of the initiative, Gatwick Airport developed a proposal to seek funding from the Future Airspace Strategy to allow the program to be undertaken by Sustainable Aviation as a UK wide study. The study has now commenced and is proposed for completion in December 2018, with its subsequent implementation at Gatwick in 2019.

Arriving Aircraft							
ACTION	**IMPACT AREA**	**NOS AFFECTED[6]**	**EXPECTED BENEFIT AND COST**	**PERFORMANCE INDICATOR, AND REPORTING**	**EXTERNAL SUPPORT REQUIREMENT**	**TIMESCALE**	**TARGET**
16. In line with Noise Management Board initiatives and the commitments in the Sustainable Aviation Noise Road Map, we will work with our airlines and air navigation services providers to improve CDO at Gatwick.	Arrivals	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** Continual improvement in operational practices leading to a reduction in arrivals noise and emissions. **Cost:** Airline engagement and operational improvement facilitated by GAL and NATS.	**Indicator**: CDO performance figures. **Reported:** Provided to airlines on a monthly basis and to FLOPSC/NaTMAG at every meeting.	Engagement and participation with FLOPSC, an established forums along with direct airline engagement where required.	On-going	Maintain Gatwick's position as the No. 1 airport for UK CDO performance.
17. We will implement agreed Noise Management Board Work Plan solutions that are intended to reduce the noise impact of arriving aircraft.	Arrivals	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** Reduction in arrivals noise through the delivery of activities listed in the published NMB 2017/18 Work Plan covering Fair and Equitable Distribution (FED), improvements in CDO and the sharing of best practice. **Cost:** Varied depending on the activity in question but will require support from GAL, Airlines NATS, ANS and DfT.	**Indicator**: Initiatives will be tracked according to their individual project plans. **Reported:** in progress updates to every NMB and publicly in an annual report.	Support and engagement with the NMB, an established group, which includes industry and community representatives.	2019 - 2024	Delivery of agreed Noise Management Board Work Plan activities.

Departing Aircraft							
ACTION	**IMPACT AREA**	**NOS AFFECTED[6]**	**EXPECTED BENEFIT AND COST**	**PERFORMANCE INDICATOR, AND REPORTING**	**EXTERNAL SUPPORT REQUIREMENT**	**TIMESCALE**	**TARGET**
18. We will continue to promote adherence to the Departures Code of Practice through groups such as FLOPSC, Sustainable Aviation and other communication events.	Departures	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** Continual improvement in optimal departures performance. **Cost:** Airline engagement and operational improvement facilitated by GAL and ATC personnel.	**Indicator**: Metrics such as track keeping etc. **Reported:** Shared with FLOPSC and NaTMAG and publicly within the FPT reports.	Engagement and participation with established forums (FLOPSC) along with direct airline engagement where required.	On-going	Continue to share code of practice with airlines and by 2020 provide timely performance data to drive continuous improvement.
19. We will continue to promote, monitor, seek to improve and report on adherence to the departure noise abatement procedures detailed in the London Gatwick Aeronautical Information Publication.	Departures	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** As above for Action 18. **Cost:** As above for Action 18.	**Indicator**: Metrics such as track keeping etc. **Reported:** Shared with FLOPSC and NaTMAG and publicly within the FPT reports.	Engagement and participation with established forums (FLOPSC) along with direct airline engagement where required.	On-going	By 2020 provide timely performance data to drive continuous improvement.
20. We have an annual limit of no more than 5% off-track departures. In future, we will compare on an annual basis the percentage of off-track departures against the average performance over the previous five years.	Departures	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** Management and control of departures track keeping up to the minimum vectoring altitude. **Cost:** Airline engagement and operational improvement facilitated by GAL and ATC personnel. In certain cases airspace change may be required to improve track keeping.	**Indicator**: Metrics such as track keeping etc. **Reported:** Shared with FLOPSC and NaTMAG and publicly within the FPT reports.	Engagement and participation with established forums (FLOPSC) along with direct airline engagement where required.	2019 - 2024	No more than 5% off-track departures per year.
21. In conjunction with our partners and the Noise Management Board we will adopt a preferred Noise Abatement Departure Procedure (NADP).	Departures	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** Controlled management of departures noise. **Cost:** Fuel burn, CO_2, NO_x and noise vary depending on the procedure selected however the study will aim to determine the optimum solution.	**Indicator:** Publication of DfT ANMAC and NMB study on NADP. **Reported:** To the NMB and NaTMAG.	Engagement and participation with established forums (DfT ANMAC, FLOPSC and NMB).	2019	Implement a preferred NADP by the end of 2019.

Departing Aircraft							
ACTION	**IMPACT AREA**	**NOS AFFECTED[6]**	**EXPECTED BENEFIT AND COST**	**PERFORMANCE INDICATOR, AND REPORTING**	**EXTERNAL SUPPORT REQUIREMENT**	**TIMESCALE**	**TARGET**
22. We undertake to explore opportunities to remove the altitude restrictions on departure Routes intended to reduce the noise impact of departing aircraft.	Departures	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** Increase in the ability to perform continuous climb operations and reduce noise and emissions. **Cost:** Airspace change and consultation process at Gatwick and nearby London airports.	**Indicator:** Completion of the feasibility studies. **Reported:** To the NMB and NaTMAG.	NATS to validate studies as required.	2024	Identify opportunities and implement options.
23. We undertake to explore the feasibility of introducing an alternative Standard Instrument Departure routes within our Noise Preferential Routes in order to provide dispersions and / or respite.	Departures	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** Use of alternative SID routes within a single NPR could be used to avoid sensitive areas or multiple routes could be used to provide a wider distribution or respite. **Cost:** Airspace change and consultation process.	**Indicator:** Completion of the feasibility study. **Reported:** To the NMB and NaTMAG.	NATS to validate the study.	2019	Identify opportunities and implement options.

Airline Supplementary Charges							
ACTION	**IMPACT AREA**	**NOS AFFECTED[6]**	**EXPECTED BENEFIT AND COST**	**PERFORMANCE INDICATOR, AND REPORTING**	**EXTERNAL SUPPORT REQUIREMENT**	**TIMESCALE**	**TARGET**
24. We will continue to fine aircraft in breach of the Department for Transport departure noise limits with all such monies passed to the Gatwick Airport Community Trust.	Departures	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** Management of excessively noisy departures. **Cost:** Management and upkeep of the program.	**Indicator:** Aircraft noise infringements identified by the airport Noise and Track Keeping system. **Reported:** in FPT quarterly and annual reports.	Direct airline engagement.	On-going	Apply fines for breeches and direct these to the Gatwick Airport Community Trust.
24a. We will review and increase the fines currently levelled against airlines which breech departure noise limits with all such monies passed to the Gatwick Airport Community Trust.	Departures	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** Management of excessively noisy departures. **Cost:** Review process.	**Indicator:** Aircraft noise infringements identified by the airport Noise and Track Keeping system. **Reported:** in FPT quarterly and annual reports.	Direct airline engagement.	On-going	Increase fines for breeches of noise limits and continue to direct fines to the Gatwick Airport Community Trust.
25. Through engagement with the Department for Transport, Aircraft Noise Management Advisory Committee and/or through unilateral action review our departure noise limits.	Departures	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** Drive continual and further improvement in departures performance. **Cost:** Research and implementation of relevant noise controls.	**Indicator:** Input papers and letters as appropriate to Sustainable Aviation and DfT ANMAC working groups. **Reported:** to FLOPSC, NMB and NaTMAG.	Engagement and participation with established DfT ANMAC forum. Analysis work as required to be carried out by CAA ERCD.	2024	Attendance at meetings and propose the review.

Airline Supplementary Charges							
ACTION	IMPACT AREA	NOS AFFECTED[6]	EXPECTED BENEFIT AND COST	PERFORMANCE INDICATOR, AND REPORTING	EXTERNAL SUPPORT REQUIREMENT	TIMESCALE	TARGET
26. We will work with our airlines and noise governance groups to explore the feasibility of introducing supplementary charges for aircraft departures which persistently fail to operate in accordance with Noise Preferential Routes prescribed for the airport as measured by the noise and track monitoring system operated by Gatwick Airport Ltd, with all such monies passed to the Gatwick Airport Community Trust.	Departures	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** Drive continual and further improvement in departures performance. **Cost:** Research on applicable charges, airline engagement and implementation of supplementary charges.	**Indicator:** Input papers and letters as appropriate to Airlines, NMB, NaTMAG and FLOPSC. **Reported:** to FLOPSC, NMB and NaTMAG.	Engagement and participation with established forums (FLOPSC, NaTMAG and NMB) along with direct airline engagement where required.	On-going	Identify opportunities and implement options.

Mitigation Schemes							
ACTION	**IMPACT AREA**	**NOS AFFECTED[6]**	**EXPECTED BENEFIT AND COST**	**PERFORMANCE INDICATOR, AND REPORTING**	**EXTERNAL SUPPORT REQUIREMENT**	**TIMESCALE**	**TARGET**
27. We will continue to provide a vortex-damage repair scheme to repair roofs that have been damaged by aircraft vortices.	Community assistance scheme	Communities within and beyond 60dB Lden (in excess of 2,300)	**Benefit:** Community reassurance that GAL will recompense damaged caused by aircraft wake vortices. **Cost:** Management of the program.	**Indicator:** Applications received for the program. **Reported:** to internal management.	Scheme contractor via a commercial agreement.	On-going	Maintain the scheme and introduce transparent reporting.
28. We will continue a scheme that helps with the cost of acoustically insulting homes against the effects of aircraft noise. We undertake to review the scheme every 5 years to ensure it remains appropriate and relevant.	Community noise mitigation initiative	Communities within and beyond 60dB Lden (in excess of 2,300)	**Benefit:** Reduction in indoor noise levels for those significantly affected by aviation noise levels. **Cost:** Management of the program.	**Indicator:** Applications received for the current program. Along with a review and implementation of changes as required. **Reported:** to internal management.	Insulation contractor via a commercial arrangement.	2019 - 2024	Maintain the current scheme and implement any changes arising from reviews.
28a We will undertake a review of our acoustic noise insulation programs by the end of 2019. With subsequent reviews considered every 5 years as noted in Action 28.	Community noise mitigation initiative	Communities within and beyond 60dB Lden (in excess of 2,300)	**Benefit:** Updated noise reduction program for those significantly affected by aviation noise levels. **Cost:** Review of the program.	**Indicator:** Review conducted. **Reported:** to internal management.	Insulation contractor.	2019 - 2024	Review completed by the end of 2019.
29. We will continue to offer acoustic insulation to noise sensitive buildings within the $60L_{Aeq}$ noise contour.	Community noise mitigation	Communities within and beyond 60dB Lden (in excess of 2,300)	**Benefit:** Reduction in indoor noise levels for those significantly affected by aviation noise levels. **Cost:** Management of the program.	**Indicator:** Applications received for the current program. **Reported:** to internal management.	Insulation contractor via a commercial arrangement.	2019 - 2024	Maintain the current scheme and implement any changes arising from reviews.

Mitigation Schemes							
ACTION	**IMPACT AREA**	**NOS AFFECTED[6]**	**EXPECTED BENEFIT AND COST**	**PERFORMANCE INDICATOR, AND REPORTING**	**EXTERNAL SUPPORT REQUIREMENT**	**TIMESCALE**	**TARGET**
30. To address the impacts of future growth we will continue to offer to purchase those properties suffering from both a high level of noise (63dB(A) Leq or more) and a large increase in noise (3dB(A) Leq or more), in accordance with the Terms of Reference of the Property Market Support Bond and Home Owners Support Scheme.	Community noise mitigation Initiative	Communities within and beyond 65dB Lden (in excess of 600)	**Benefit:** Community reassurance that those who may be significantly affected by future growth of Gatwick. **Cost:** Financial commitment to the Scheme.	**Indicator:** Applications received for the current program. **Reported:** Not currently reported.	None required.	On-going	Maintain the current scheme.

Noise Reduction Measures							
ACTION	**IMPACT AREA**	**NOS AFFECTED[6]**	**EXPECTED BENEFIT AND COST**	**PERFORMANCE INDICATOR, AND REPORTING**	**EXTERNAL SUPPORT REQUIREMENT**	**TIMESCALE**	**TARGET**
31. In conjunction with the Noise Management Board we will explore innovative methods to reduce both inbound and outbound aircraft noise levels.	Arrivals, Departures / community trust and awareness	Communities within and beyond 55dB Lden (in excess of 13,500)	**Benefit:** Reduction in arrivals and departures noise through the implementation of activities on the NMB 2017/18 work plan (and subsequent iterations). **Cost:** Varied depending on the activity in question but will require support from GAL, Airlines NATS, ANS and DfT. Implementation may require an airspace change process in some cases.	**Indicator**: Implementation progress reports. **Reported:** to each NMB meeting with public reports published annually.	Support and engagement with the NMB, an established group, which includes industry and community representatives.	2019 - 2024	Implement the identified and agreed tasks within the relevant NMB work plan for that period.

Monitoring and Reporting our Progress							
ACTION	**IMPACT AREA**	**NOS AFFECTED[6]**	**EXPECTED BENEFIT AND COST**	**PERFORMANCE INDICATOR, AND REPORTING**	**EXTERNAL SUPPORT REQUIREMENT**	**TIMESCALE**	**TARGET**
32. We will ensure that our Noise and Track Keeping (NTK) systems are suitable, relevant and reliable, providing updates as appropriate.	Community trust and awareness	Not Applicable	**Benefit:** Provision of a suitable, relevant and reliable NTK system for use by industry and community stakeholders. **Cost:** Licencing and software development to cover regular updates.	**Indicator**: Provision of the NTK service, including updates where required. **Reported:** Updates will be presented to NaTMAG.	Engagement and participation with NaTMAG, an established group. NTK supplier via a commercial agreement.	On-going	Continually review and update the NTK system.
33. We will continue to provide public access to flight track information and noise related data via the Gatwick Airport noise website and the online flight tracking facility, available both on desktop and mobile devices.	Community trust and awareness	Not Applicable	**Benefit:** Provision of a suitable, relevant and reliable flight tracking system for use by industry and community stakeholders **Cost:** Licencing and software development to cover regular updates.	**Indicator:** Provision of the Noise and Track Keeping service on desktop and mobiles. **Reported:** Updates will be presented to NaTMAG.	NTK supplier via a commercial agreement.	On-going	Provision of the Noise and Track Keeping service on desktop and mobiles.
34. We will continue to provide an airspace analysis service and implement service improvements where identified. The team will continue to provide accurate and timely data to aid strategy development and noise complaint handling.	Arrivals Departures Ground along with community trust and awareness	Not Applicable	**Benefit:** Provision of a dedicated analysis, engagement and operational improvement team to deliver further reductions in arrival and departure noise and emissions. **Cost:** Staffing of the FPT along with ATC and airline engagement.	**Indicator:** Provision of FPT services including but not limited to: • Support to NMB initiatives • Noise Abatement Reporting, • Ad-hoc Analysis, • Night Flight Administration, • Complaints Handling. **Reported:** Published quarterly and annually within the FPT report.	None required.	On-going	Continual provision of an FPT service and the publication of quarterly and annual reports.

Monitoring and Reporting our Progress							
ACTION	**IMPACT AREA**	**NOS AFFECTED[6]**	**EXPECTED BENEFIT AND COST**	**PERFORMANCE INDICATOR, AND REPORTING**	**EXTERNAL SUPPORT REQUIREMENT**	**TIMESCALE**	**TARGET**
35. We will improve the availability of, and access to, airspace and noise related data.	Strategic Approach/ community trust and awareness	Not Applicable	**Benefit:** Improved provision of timely and transparent data for airport and community stakeholders. **Cost:** Part of the function of the FPT.	**Indicator:** Review of current information provision. **Reported:** Updates and changes will be presented to NaTMAG.	Engagement and participation with NaTMAG, an established group.	2020	Publication of data in the improved format.
36. We will explore the feasibility of introducing an information service for local communities. This could include updates on airport operations, e.g. scheduled northern runway operations, change in runway direction, meteorological information, scheduled number of aircraft movements during the day and night periods, reported thunderstorm activity etc.	Community trust and awareness	Not Applicable	**Benefit:** Improved provision of timely and transparent data for airport and community stakeholders. **Cost:** Part of the function of the FPT.	**Indicator:** Review of available options. **Reported:** Updates and changes will be presented to NaTMAG.	Engagement and participation with NaTMAG, an established group.	2022	Implement the information service.
37. We will continue to provide a Community Noise Monitoring Scheme, operated under the supervision of the Noise and Track Monitoring Advisory Group and the Gatwick Noise Monitoring Group.	Arrivals Departures Community trust and awareness	Not Applicable	**Benefit:** Improved understanding of arrivals and departure noise whilst measuring the benefits delivered by the actions proposed in this plan. **Cost:** Part of the function of the FPT.	**Indicator:** Deployment of mobile noise monitoring terminals to locations around the airport. **Reported:** to NaTMAG via the Gatwick Noise Monitoring Group.	Engagement and participation with NaTMAG, an established group.	On-going	Timely publication of community noise monitoring reports.

Monitoring and Reporting our Progress							
ACTION	**IMPACT AREA**	**NOS AFFECTED[6]**	**EXPECTED BENEFIT AND COST**	**PERFORMANCE INDICATOR, AND REPORTING**	**EXTERNAL SUPPORT REQUIREMENT**	**TIMESCALE**	**TARGET**
37a. We will seek to expand the Community Noise Monitoring Scheme with additional noise monitoring terminals and update the reporting process to include holistic noise reports for the area around Gatwick Airport.	Arrivals Departures Community trust and awareness	Not Applicable	**Benefit:** Additional noise monitoring capability to gather quantifiable data on noise impacts. **Cost:** Procurement of noise monitors and development of reporting processes.	**Indicator:** Procurement of additional noise monitoring terminals and new reporting process. **Reported:** to NaTMAG via the Gatwick Noise Monitoring Group.	Engagement and participation with NaTMAG, an established group.	On-going	Procurement and deployment of additional monitors. Publication of new reports.
38. We will report progress against the published Noise Abatement Procedures contained within the London Gatwick Aeronautical information Publication and this Noise Action Plan on a quarterly basis to the Noise and Track Monitoring Advisory Group, the Gatwick Airport Consultative Committee and on our webpages.	Arrivals Departures Ground	Not Applicable	**Benefit:** Tracking and reporting of adherence to deliver further reductions in arrival and departure noise and emissions. **Cost:** Part of the function of the FPT.	**Indicator:** Data analysis on the compliance with the AIP. **Reported:** Quarterly to NaTMAG and published quarterly and annually within the FPT reports.	Engagement and participation with NaTMAG and GATCOM, both established groups.	On-going	Timely publication of quarterly and annual FPT reports.
39. We will update to our website the following noise contours: • Summer 16 hour day L_{eq} (actual) • Summer 16 hour day (standard) L_{eq} • Summer Night L_{eq} (actual) • The above compared to the previous year. • Summer Night 10 year average modal split L_{eq}	Arrivals Departures Ground	Not Applicable	**Benefit:** Provision of an independent assessment of noise contours using a long term assessment method. **Cost:** GAL/ CAA ERCD resource.	**Indicator:** Commission the contours from CAA ERCD. **Reported:** Published online.	CAA ERCD via a commercial agreement.	On-going	Noise contours published on the Gatwick website.

Monitoring and Reporting our Progress							
ACTION	**IMPACT AREA**	**NOS AFFECTED[6]**	**EXPECTED BENEFIT AND COST**	**PERFORMANCE INDICATOR, AND REPORTING**	**EXTERNAL SUPPORT REQUIREMENT**	**TIMESCALE**	**TARGET**
39a. We will aim to reach a measure of consensus with community groups on future airport utilisation relative to noise impacts. In order to achieve this we will conduct a review of Government policy including how Government policy should be interpreted and how that policy has been applied in practice. Following the establishment of a workable policy baseline we will aim to develop new noise metrics and reporting to complement the current noise contours and measure our future noise performance. This work will be used to more precisely describe outcomes to support this END Noise Action Plan.	Strategic Approach	Not Applicable	**Benefit:** Measurement of noise performance. **Cost:** GAL resource.	**Indicator:** Commencement of the study. **Reported:** Circulated to the relevant airport noise groups (GATCOM, NaTMAG and NMB) as appropriate.	Engagement with, Sustainable Aviation, DfT ANMAC, environmental health officers, GATCOM, NaTMAG and NMB as required.	2020	Publication of supplementary metrics.

Managing Aircraft Noise Complaints							
ACTION	**IMPACT AREA**	**NOS AFFECTED[6]**	**EXPECTED BENEFIT AND COST**	**PERFORMANCE INDICATOR, AND REPORTING**	**EXTERNAL SUPPORT REQUIREMENT**	**TIMESCALE**	**TARGET**
40. We will seek to respond to at least 95% of all complaints and enquiries within eight working days of receipt, in line with the extant Complaints Handling Policy, and publish our performance in FPT quarterly reports.	Community trust and awareness	Not Applicable	**Benefit:** Timely review, investigation and response to noise complaints. Whilst long term trend analysis supports operational improvement. **Cost:** Part of the function of the FPT.	**Indicator:** Complaint tracking and management by the FPT. **Reported:** Quarterly to NaTMAG and published quarterly and annually within the FPT reports.	None required.	On-going	Timely publication of quarterly and annual FPT reports.
41. We will continue to log all complaints relating to aircraft operations in line with the extant Noise Complaints Handling Policy and publish the statistics on our website quarterly.	Community trust and awareness	Not Applicable	**Benefit:** Collection and analysis of complaints to support operational improvement. **Cost:** Part of the function of the FPT.	**Indicator:** Complaint tracking and management by the FPT. **Reported:** Quarterly to NaTMAG and published quarterly and annually within the FPT reports.	None required.	On-going	Timely publication of quarterly and annual FPT reports.
42. We will continue to offer various methods for complaints about aircraft noise events.	Community trust and awareness	Not Applicable	**Benefit:** Allow complainants to provide complaints using various methods suited to their individual needs. **Cost:** Part of the function of the FPT.	**Indicator:** Availability of the various methods (Casper and free post). **Reported:** Availability reported publicly.	None required.	On-going	Implement a complaints phone line by the end of 2019.

Managing Aircraft Noise Complaints							
ACTION	**IMPACT AREA**	**NOS AFFECTED[6]**	**EXPECTED BENEFIT AND COST**	**PERFORMANCE INDICATOR, AND REPORTING**	**EXTERNAL SUPPORT REQUIREMENT**	**TIMESCALE**	**TARGET**
43. In order to achieve community confidence in the Complaints Handling Policy and provide transparency of information, we will, where appropriate update our procedures relating to the receipt, processing and reporting of aircraft noise complaints.	Strategic Approach	Not Applicable	**Benefit:** Improved transparency and confidence in the complaints handling process. **Cost:** Part of the function of the FPT.	**Indicator:** Review and update to the Complaints Handling Policy. **Reported:** Updates and changes will be presented to NaTMAG.	None required.	On-going	Online publication of the policy.

Engagement							
ACTION	**IMPACT AREA**	**NOS AFFECTED[6]**	**EXPECTED BENEFIT AND COST**	**PERFORMANCE INDICATOR, AND REPORTING**	**EXTERNAL SUPPORT REQUIREMENT**	**TIMESCALE**	**TARGET**
44. Gatwick will continue to engage actively with Government, the Regulator, Sustainable Aviation and such ad-hoc reviews that may be established and will respond appropriately to relevant consultations, engagement exercises and recommendations arising from those activities.	Strategic Approach	Not Applicable	**Benefit:** Continual improvement in the operational and strategic management of noise and emissions. **Cost:** Staffing to support the ongoing engagement activity.	**Indicator:** Engagement with relevant stakeholders. **Reported:** Submission of consultation responses.	Membership of working groups.	On-going	Submission of consultation responses.
45. Gatwick Airport will implement relevant recommendations resulting from feasibility studies in conjunction with the CAA and the DfT as and when they are released.	Strategic Approach	Not Applicable	**Benefit:** Continual improvement in the operational and strategic management of noise and emissions. **Cost:** Staffing to support the ongoing engagement activity.	**Indicator**: Publication of the findings and recommendations of the relevant studies. **Reported:** Implementation of recommendations as required.	Support from CAA, NATS, ANS and airlines as and when required and achieved through extant working relationships.	On-going	Implement relevant findings.
46. We will continue to engage with local communities through the established noise governance groups.	Community trust and awareness	Not Applicable	**Benefit:** Provision of airport information to the community and an understanding of local issues by the airport. **Cost:** Staffing to support the ongoing engagement activity.	**Indicator**: Continual operation and attendance at community meetings. **Reported:** Meeting minutes published.	Engagement and participation with NaTMAG, GNMG, NMB and GATCOM along with sub-groups as required.	On-going	Attendance at each meeting and production of papers as required.

Engagement							
ACTION	**IMPACT AREA**	**NOS AFFECTED[6]**	**EXPECTED BENEFIT AND COST**	**PERFORMANCE INDICATOR, AND REPORTING**	**EXTERNAL SUPPORT REQUIREMENT**	**TIMESCALE**	**TARGET**
47. We will continue to support the existence of, and engage with a Noise Management Board, the workplan and meeting papers, which will be adequately published to our other noise governance groups and online.	Arrivals Departures Ground/ Community trust and awareness	Not Applicable	**Benefit:** Continual improvement in the operational and strategic management of noise and emissions. Whilst implementing operational initiatives and strategies to reduce the impact of aviation noise. **Cost:** Staffing to support the ongoing engagement activity.	**Indicator:** Participation and support to the NMB. **Reported:** Meeting minutes and relevant papers published.	Engagement and participation with NMB and sub-groups as required.	On-going	Attendance at each meeting and production of papers as required.
48. We will continue to engage with and provide noise data as required to local Environmental Health Officers through the Gatwick Noise Monitoring Group.	Strategic Approach	Not Applicable	**Benefit:** Provision of timely and transparent data to Environmental Health Officers. **Cost:** Part of the function of the FPT.	**Indicator**: Participation and support to the GNMG. **Reported:** To NaTMAG and publicly within the NaTMAG minutes.	Engagement and participation with GNMG.	On-going	Attendance at each meeting and production of papers as required.
49. In conjunction with the Gatwick Noise Monitoring Group we will commission noise studies to gain an insight into the noise climate in a particular area and holistically across the Gatwick area. We will publish these reports on our website.	Strategic Approach	Not Applicable	**Benefit:** Improved understanding of arrivals and departure noise whilst measuring the benefits delivered by the actions proposed in this plan. **Cost:** Part of the function of the FPT.	**Indicator**: Participation and support to the GNMG. **Reported:** To NaTMAG and publicly within the NaTMAG minutes.	Engagement and participation with GNMG.	On going	Publication of local and holistic noise studies.
50. We will continue to host an annual airspace seminar, to include an annual update from the Noise Management Board, inviting local interest groups and stakeholders.	Community trust and awareness	Not Applicable	**Benefit:** Provision of airport information to the community and an understanding of local issues by the airport. **Cost:** Staffing to support the ongoing engagement activity.	**Indicator**: Hosting the event. **Reported:** Relevant papers published online.	Support from CAA, NATS, ANS and airlines as and when required and achieved through membership of the NMB.	On going (annually)	Hold an airspace seminar once per year.

Engagement							
ACTION	**IMPACT AREA**	**NOS AFFECTED[6]**	**EXPECTED BENEFIT AND COST**	**PERFORMANCE INDICATOR, AND REPORTING**	**EXTERNAL SUPPORT REQUIREMENT**	**TIMESCALE**	**TARGET**
51. We will continue to engage with local planning authorities in order to ensure they are well informed about noise issues at Gatwick, and to provide information on the airport and its operation.	Strategic Approach	Not Applicable	**Benefit:** Provision of timely and transparent data to local planning authorities. **Cost:** Part of the function of the FPT.	**Indicator**: Participation and support to the Quarterly S106 steering group meetings. **Reported:** S106 reports published online.	Engagement and participation with local authorities.	On-going	Circulation of data and publication of reports as appropriate.

FUTURE AIRSPACE CHANGE							
ACTION	**IMPACT AREA**	**NOS AFFECTED[6]**	**EXPECTED BENEFIT AND COST**	**PERFORMANCE INDICATOR, AND REPORTING**	**EXTERNAL SUPPORT REQUIREMENT**	**TIMESCALE**	**TARGET**
52. We will participate in all activities relating to 'LAMP2' – the redesign of the London Terminal Manoeuvring Area (LTMA) and en-route airspace to eliminate chokepoints, alleviate areas of intensive aircraft concentrations, reduce the number of people affected by noise and to create a structure that has capacity to accommodate forecast traffic levels beyond 2040.	Strategic Approach / Arrivals Departures Ground	Not Applicable	**Benefit:** Large, LAMP 2 has the potential to deliver significant reductions in noise and emission through continuous descent and climb whilst providing increased capacity. **Cost:** Large requiring significant and long term input from all airports in the south east of the UK, CAA, NATS and the DfT.	**Indicator**: Engagement with airports, NATS, CAA and DfT via bilateral and established working groups. **Reported:** Progress reports circulated to GATCOM, NaTMAG and NMB as appropriate.	Support from CAA, NATS, ANS and airlines via established LAMP 2 groups.	2024	By 2024 implement LAMP 2 airspace.
53. Ensure that local communities are informed about LAMP 2 plans and the progress and airport plans for the integration of Gatwick specific departure and arrival procedures.	Strategic Approach / Arrivals Departures Ground	Not Applicable	**Benefit:** Local communities are aware of the LAMP 2 plans and area able to provide input to the airspace concept and design. **Cost:** Large requiring significant and long term input from all airports in the south east of the UK, CAA, NATS and the DfT.	**Indicator:** Information provided on the LAMP 2 process along with consultation documents, events and presentation as and when required. **Reported:** As and when required.	Engagement and participation with NaTMAG, GNMG, NMB and GATCOM along with sub-groups as required.	2024	Conduct of airspace consultation in accordance with CAP1616.

SECTION 19 – QUANTIFICATION OF THE NOISE ACTION PLAN

THE ORIGINAL 2010 – 2015 NOISE ACTION PLAN

In developing the original Noise Action Plan we took into account the guidance issued to airport operators at that time. This suggested that residential areas exposed to an annual noise level of 69L_{Aeq}, 16h or more should be considered for further measures as a first priority. However unlike the guidance for the other major environmental noise sources (road and rail) the guidance did not offer a specific level by which to determine important areas within the strategic noise maps.

Subsequently we took the following steps to determine the most appropriate and effective actions to include in our draft noise action plan.

PRIOR TO PUBLIC CONSULTATION

Firstly we considered the areas enclosed by the strategic noise maps and our existing noise complaint database. This confirmed our expectation that complaints about the impact of aircraft noise originate from locations both inside and outside the area within the strategic noise maps (see Section 7 of the original report) and are about both air and ground noise. It also showed that issues such as night flying, runway alternation, arrivals noise, the number of over flights and low flying were consistently among the top issues of concern. Without guidance to the contrary and with our evidence and experience in managing noise from Gatwick we were determined that our action plan should include actions to limit, and where practicable, reduce noise impacts for areas both inside and outside the contours as well as ground noise. In this regard we extended the scope of the action plan beyond the END requirements.

Next we used results from three international benchmarking studies by independent consultants, to help identify potential actions we could consider. Over 30 international airports worldwide were selected based on the number of annual movements and regional prominence. This exercise revealed that for operational noise controls Gatwick was one of, if not the leading airport worldwide. Similarly, although direct comparison is difficult, our mitigation and compensation benchmarking study showed Gatwick to be among the leading airports in this area. The final area of benchmarking concerned stakeholder engagement and communication. The results of this showed the greatest opportunities for improvement, with more than a dozen airports more effective in this area.

We used this information to review all our existing noise management activities, identify additional ones and consider how they would impact on the areas enclosed by the 2006 noise mapping results and beyond. These new actions were then given a general ranking (high, medium and low) in terms of costs and benefits.

Following on from this and in order to prepare the then 'draft' noise action plan for full public consultation we held a series of pre-consultation, events with representatives from airlines, NATS, local authorities, local residents groups and members of the Gatwick Airport Consultative Committee.

A number of key themes emerged such as concern over current flight paths, night flights and sleep disturbance, application of noise mitigation and compensation schemes, the frequency of overflight, and a desire for recognition of the impact beyond the areas within the strategic noise maps.

Subsequently a total of 52 actions of which around 14 could be considered new activities were issued for public consultation over 16 weeks between 18 June and 7 October 2009. Key issues raised by the consultation included calls to stop night flights and to provide more financial help for insulation schemes, as well as the need to address issues relating to arrival and departure trajectories (44%). There were also a number of issues raised in relation to changing the current flight paths at Gatwick (30%) and how the action plan should be enforced (24%).

RESPONDING TO THE FEEDBACK

In response we reviewed and amended our performance indicators and established targets whenever possible.

As regards our insulation schemes we noted the many comments and remained committed to undertaking a review of the schemes in 2010. We also continued to support efforts to improve operational practices, including examining departure and arrival procedures.

We also added actions indicating our intention to request that the Government review the existing departure noise limit restrictions, airspace utilisation and night noise limits.

We also sought to identify opportunities to further involve key stakeholders in some of the actions detailed in the plan. For example we amended our benchmarking actions to include input from members from the Noise and Track Monitoring Advisory Group. Similarly we also sought the groups input in the formulation of a suite of noise metrics to describe our noise impacts.

REVISION OF THE NOISE ACTION PLAN 2013 – 2018

In 2013 following the second round of noise mapping for Gatwick Airport it was necessary to review and revise, as necessary, the Noise Action Plan that had previously been prepared and adopted by the Secretary of State. As the actions detailed in the original Noise Action Plan were already in existence and are therefore in most instances remained valid the guidance received was to review, update and generally refresh the document taking into account the following:

- the results of the noise mapping completed in 2012;
- the progress made against the actions described in the original action plan;
- any relevant updates about the airport and its operation;
- updating information about relevant legislation and standards;
- updating relevant national and local policies;
- information about any proposed new actions and any on-going actions.

Once the plan had been revised, it was presented to the Gatwick Airport Consultative Committee (GATCOM) for comment. Gatwick Airport Ltd reflected upon the comments received from the Gatwick Airport Consultative Committee, description of which were be included in the revised plan together with a reasoned justification for the response to the issues raised.

REVISION OF THE NOISE ACTION PLAN 2018 – 2024

In 2017, following the third round of noise mapping for Gatwick Airport it once again become necessary to review and revise, as necessary, the Noise Action Plan that had previously been prepared and adopted by the Secretary of State.

The guidance to airport operators remained similar to that of previous years as there had been no substantive changes to the content or underlying regulatory requirements. As Gatwick Airport already had an Action Plan in place, a relatively light touch "review and revise" updating process was proposed by DEFRA. This did not stop airports from undertaking a more detailed review and update should it be deemed appropriate. In revising the Noise Action Plan, the airport was required to include:

- updated details about the airport and its operation;
- the results of the noise mapping completed in 2017;
- the progress made against the actions described in the current Action Plan;
- updated information about relevant legislation and standards;
- updated relevant national and local policies;
- information about on-going actions; and
- information about any proposed new actions.

DEFRA guidance stated that once the plan had been revised it would be presented to the Airport's Consultative Committee for comment, and any other appropriate bodies depending on the extent and nature of the revisions. The Airport Operator would summarise the comments received in the revised plan together with the responses to the issues raised.

IT WAS PROPOSED THAT:

1. The draft Noise Action Plan be prepared by Gatwick Airport Ltd in accordance with the published guidance.
2. The Noise Management Board be advised of the revision of the draft Noise Action Plan in order for it to advise the Gatwick Airport Consultative Committee accordingly.
3. The draft Noise Action Plan be presented to the Gatwick Airport Consultative Committee, Crawley Borough Council and West Sussex County Council (being the lead local authorities of the Memorandum of Understanding with wider local authorities) for feedback and comment.
4. Any other feedback received be evaluated by Gatwick Airport Ltd and, if appropriate included.
5. Once all feedback has been received, it will be evaluated by Gatwick Airport Ltd and, if appropriate included into the draft Noise Action Plan. Details of feedback received will be included in the annexes of the draft Noise Action Plan. The decision of Gatwick Airport Ltd is final and correspondence will not be entered into regarding the decision to include material or otherwise.
6. The draft Noise Action Plan will be submitted to DEFRA for adoption. Once adopted, the Noise Action Plan will cease to be in draft status.

It was agreed at the meeting of GATCOM on 26 April 2018 that the draft Noise Action Plan, having been updated in response to the feedback received, be presented to the 21 June 2018 meeting of the GATCOM Steering Group for consideration prior to it being presented for a final time to the full meeting of GATCOM, scheduled for 19 June 2018. The effect of this additional stage of consultation is that there has been three stages of consultation; commencing with the circulation of a proposed list of Action Plan Actions, the circulation of an initial draft Noise Action Plan and culminating in the final draft of the Noise Action Plan being presented.

The airport publicised the revision of the END Noise Action Plan through the various committees attended and also online. We encouraged members of the community to contact their GATCOM Representative in the first instance with any feedback or requests for particular issues to be considered for inclusion.

Any other feedback received from interested parties is included in the annexes of this draft Noise Action Plan, in common with previous years.

NOTES

NOTICE OF ADOPTION

This EU Environmental Noise Directive (2002/49/EC) 'Round 3' Noise Action Plan was formally adopted by the Parliamentary Under Secretary of State for the Environment on 11 February 2019, as required by the Environmental Noise Directive and the Environmental Noise (England) Regulations 2006 (as amended).

Issued by Gatwick Airport Ltd
Corporate Affairs, Planning and Sustainability
7th Floor Destinations Place
Gatwick Airport
West Sussex
RH6 0NP

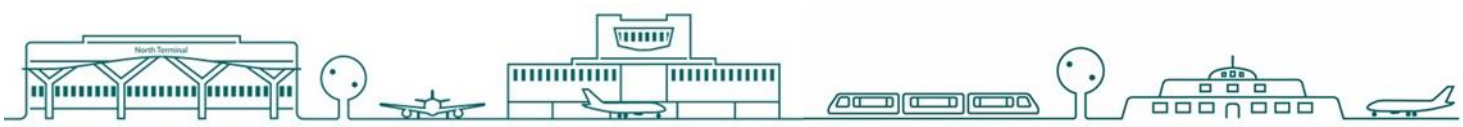
YOUR LONDON AIRPORT
Gatwick

www.gatwickairport.com/noise

© Gatwick Airport Ltd 2019. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior written permission of Gatwick Airport Ltd.

First published 14 June 2018

Gatwick Airport Limited. Registered in England 1991018. Registered Office: Destinations Place, Gatwick Airport, West Sussex, RH6 0NP



AIRPORT
EXPANSION
CONSULTATION

NOISE INSULATION POLICY

JUNE 2019

Heathrow

AIRPORT EXPANSION CONSULTATION (JUNE 2019)

Heathrow is consulting on proposals for an expanded airport.

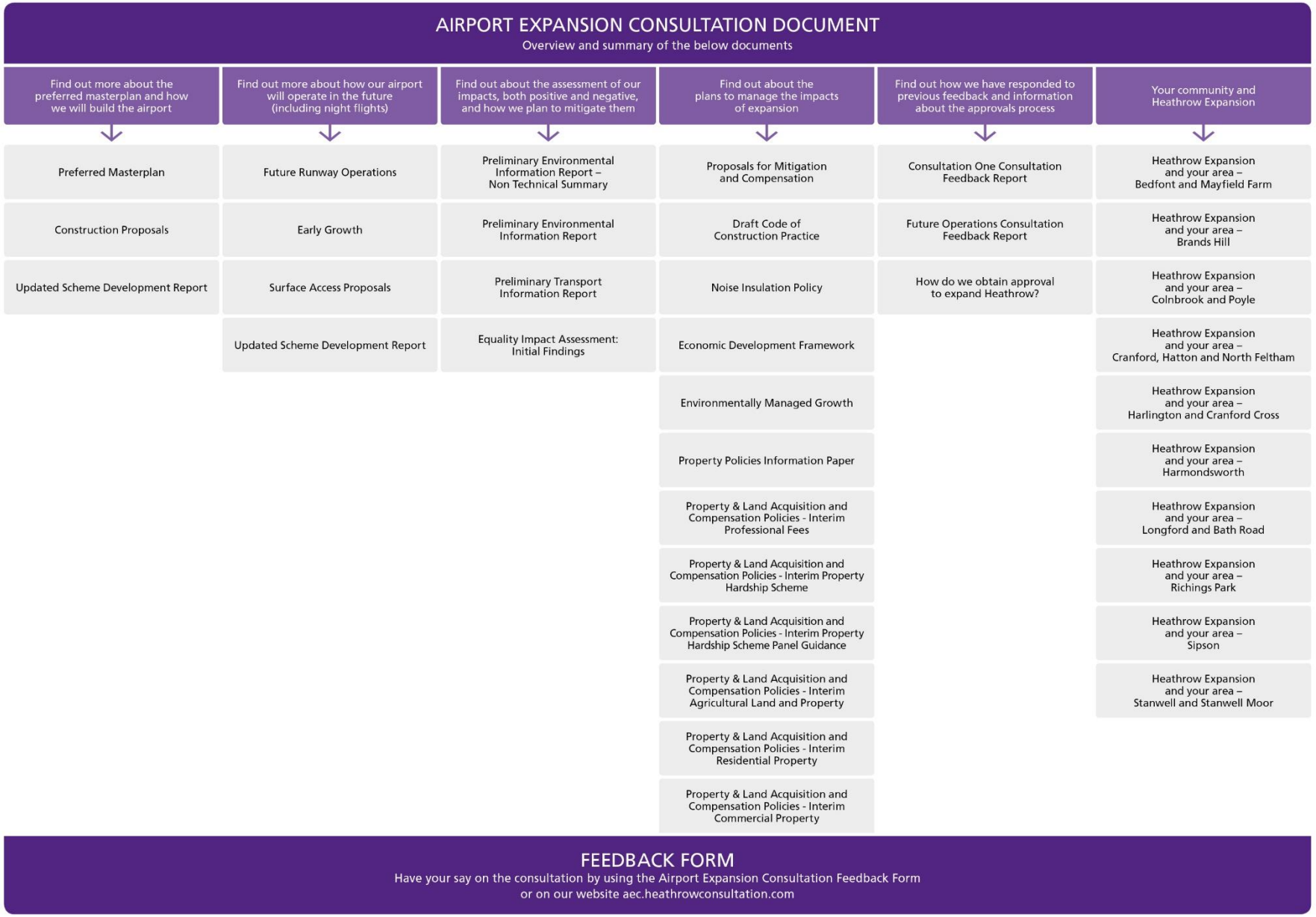
The Airport Expansion Consultation is our statutory consultation and we will be seeking your view on four key areas:

- Heathrow's preferred masterplan for expansion: our proposals for the future layout of the airport including the runway and other airport infrastructure such as terminals and road access. The masterplan will also reveal the airport's growth in phases – from runway opening in around 2026, to the end masterplan in approximately 2050;
- Plans to operate the future airport: how the future three runway airport will be operated, including important elements such as night flights, as well as how potential additional flights before the new runway opens could be operated on our existing two runways;
- Assessment of impacts of the airport's growth: our preliminary assessment of the likely impacts of expansion on the environment and local communities;
- Plans to manage the impacts of expansion: we will set out the airport's plans for mitigating the effects of expansion, including property compensation, our Noise Insulation Policy, a Community Fund, and measures to mitigate against air pollution, carbon, and other environmental effects.

We are grateful for feedback provided at previous consultations and have considered these responses in developing our proposals. We now ask for your views on our preferred proposals, so that we can further improve our project before we apply for development consent next year. You can provide feedback:

- online using the feedback form on our website aec.heathrowconsultation.com
- complete a feedback form, available at events or on request calling 0800 307 7996
- email us at feedback@heathrowconsultation.com
- write to us at Freepost LHR AIRPORT EXPANSION CONSULTATION

We have set out our proposals in a number of documents covering different topics and different levels of detail. All of these are available on our website, at Document Inspection Locations and at consultation events.


AIRPORT EXPANSION CONSULTATION DOCUMENT
Overview and summary of the below documents
Find out more about the preferred masterplan and how we will build the airport
Find out more about how our airport will operate in the future (including night flights)
Find out about the assessment of our impacts, both positive and negative, and how we plan to mitigate them
Find out about the plans to manage the impacts of expansion
Find out how we have responded to previous feedback and information about the approvals process
Your community and Heathrow Expansion
Preferred Masterplan
Construction Proposals
Updated Scheme Development Report
Future Runway Operations
Early Growth
Surface Access Proposals
Updated Scheme Development Report
Preliminary Environmental Information Report – Non Technical Summary
Preliminary Environmental Information Report
Preliminary Transport Information Report
Equality Impact Assessment: Initial Findings
Proposals for Mitigation and Compensation
Draft Code of Construction Practice
Noise Insulation Policy
Economic Development Framework
Environmentally Managed Growth
Property Policies Information Paper
Property & Land Acquisition and Compensation Policies - Interim Professional Fees
Property & Land Acquisition and Compensation Policies - Interim Property Hardship Scheme
Property & Land Acquisition and Compensation Policies - Interim Property Hardship Scheme Panel Guidance
Property & Land Acquisition and Compensation Policies - Interim Agricultural Land and Property
Property & Land Acquisition and Compensation Policies - Interim Residential Property
Property & Land Acquisition and Compensation Policies - Interim Commercial Property
Consultation One Consultation Feedback Report
Future Operations Consultation Feedback Report
How do we obtain approval to expand Heathrow?
Heathrow Expansion and your area – Bedfont and Mayfield Farm
Heathrow Expansion and your area – Brands Hill
Heathrow Expansion and your area – Colnbrook and Poyle
Heathrow Expansion and your area – Cranford, Hatton and North Feltham
Heathrow Expansion and your area – Harlington and Cranford Cross
Heathrow Expansion and your area – Harmondsworth
Heathrow Expansion and your area – Longford and Bath Road
Heathrow Expansion and your area – Richings Park
Heathrow Expansion and your area – Sipson
Heathrow Expansion and your area – Stanwell and Stanwell Moor
FEEDBACK FORM
Have your say on the consultation by using the Airport Expansion Consultation Feedback Form
or on our website aec.heathrowconsultation.com

Heathrow

NOISE INSULATION POLICY (DRAFT FOR CONSULTATION)

Non-Technical Summary

This document sets out the Noise Insulation Policy for the Heathrow Expansion Programme (the Project) to address the requirements of the Government policy - "*Airports National Policy Statement: new runway capacity and infrastructure at airports in the South East of England*" 2018 (Airports NPS).

This policy will address noise from aircraft movements in the air and on the ground, road, rail and construction noise associated with the Project.

The Noise Insulation Policy forms part of the extensive noise control measures included in the expansion Project to meet the aims of Government noise policy. The control measures on the aircraft fleet and operations first mitigate and minimise potential adverse noise effects arising from expansion and reduce existing noise from the airport. In a complementary manner, noise insulation provides compensatory control measures that aim to avoid residual significant adverse effects on health and quality of life from existing and predicted noise. This approach meets the aims of Government noise policy as stated in the Airports NPS.

For home owners, three levels of scheme will be offered, depending on the existing or predicted noise exposure level, as indicated by the relevant noise contour, source of noise and if confirmed through third-party assessment:

Scheme 1	Full cost of noise insulation fitout, potentially including new acoustic double glazing or secondary glazing, loft or ceiling insulation, ceiling over-boarding, external door upgrades and ventilation for aircraft noise.
Scheme 2	A package of noise insulation to exposed facades, potentially including acoustic double glazing or secondary glazing to windows, external door upgrades and attenuated ventilation for road, rail and construction noise exposure.
Scheme 3	A fixed £3,000 contribution to approved noise insulation works.

Eligibility for schemes will be based on published noise contours of the defined Action Levels, or thresholds, as set out in the government Airports NPS for aircraft noise, extended to include road, rail and construction noise.

Noise Insulation Schemes will be made available before defined Action Levels are expected to occur as a result of the expansion project.

In the lead up to Development Consent Order (DCO) approval, we plan to insulate homes that will be exposed to the highest noise from the Project and that are already exposed to similar noise from existing Heathrow operations. This will be via a replacement of our existing noise insulation schemes expanded in the light of changing Government policy. Homes expected to be exposed to early construction noise from the Project as well as existing high levels of aircraft noise will also be prioritised. This will help develop and test our systems and suppliers, also avoid long waiting times between applications and fit outs. Once the DCO is approved we will prioritise those forecast to be newly affected by construction, road and rail traffic and aircraft noise. We will ensure that the insulation is offered and, if accepted, installed before the new noise occurs.

Home and community building owners identified as being within the eligibility contours will be contacted and invited to apply for the schemes. We will use a seven-stage awareness process to ensure property owners are aware of their eligibility and are encouraged to apply.

Once we have received an application, an assessment will be conducted to confirm eligibility. Approved contractors will deliver a standard package of noise insulation measures, within a quality management scheme including sample completion testing.

For the very few properties that will be newly exposed to very high noise levels, where an application is not received or an offer accepted, we may need to obtain compulsory rights to provide treatments to prevent unacceptable noise exposure levels.

A dedicated support team will be provided to assist applicants throughout the process, including investigation of complaints during and after completion. Applicants will also be able to appeal to an Independent Panel.

The schemes will remain open until they cease to be relevant (for example, at the end of the construction period for the construction noise insulation), or the scheme is updated (for example if noise mitigation means that a property is no longer within a relevant contour).

These schemes will replace the existing noise insulation schemes currently offered by Heathrow including the Quieter Homes Scheme, the Day Scheme and the Night Scheme. Before existing schemes are closed, properties in those areas will be informed and advised of the scheme closure and possible eligibility for the replacement schemes. The contact period, of at least 12 months, will allow time for applications under the existing schemes before they close.

Heathrow's Community Buildings Noise Insulation Scheme will be extended to include the impacts of Expansion.

In addition to the noise insulation schemes in this draft Noise Insulation Policy, Heathrow has two other existing noise and vortex related schemes that will be refreshed. These are the Home Relocation Assistance Scheme which offers financial help to eligible homeowners living in the noisiest areas around Heathrow to move away from the area if they wish; and the Vortex Protection Scheme which is designed to protect and repair homes from around the airport damaged by wind currents from aircraft wings.

Heathrow will also introduce a Temporary Home Relocation Scheme for those most impacted by short term construction noise.

These schemes are summarised at the end of the draft Noise Insultation Policy for reference.

PREFACE: DEVELOPMENT OF THE NOISE INSULATION POLICY

1. The remainder of this document sets out the draft policy relating to noise insulation schemes to be provided in connection with the development and operation of a new north-west runway and associated infrastructure to expand Heathrow Airport. This draft policy is subject to consultation.

2. Once finalised taking into account feedback from consultation and draft policy would form the basis for the implementation of our Noise Insulation programme, if development consent is granted and we proceed with construction,

3. If the DCO application is granted, this document would become the basis for the implementation of our Noise Insulation programme. It was thought helpful, therefore, to provide a working draft of the document for this consultation in order that stakeholders could understand the terms on which Heathrow proposes to commit and comment on them whilst they remain in draft.

4. Within the document itself, there are passages which represent explanatory text for the purposes of this consultation and which will be deleted from the version published before and submitted with the DCO application. Those passages are highlighted in grey.

5. With the benefit of this explanation, hopefully this draft document is clear in its purpose and we would be pleased to receive feedback on its content and approach.

CONTENTS

1. Introduction 10
1.1 The Noise Insulation Policy for Heathrow Expansion Programme 10
1.2 Heathrow's Noise Insulation Strategy 11

2. CONTEXT: Policy, Standards and Guidance 12
2.1 Airports National Policy Statement 12
2.2 Aviation Policy Framework 13
2.3 Noise Policy Statement for England 14
2.4 World Health Organisation Guidelines for Community Noise (1999) 15
2.5 Noise Insulation Regulations (1975) 16
2.6 The Noise Insulation (Railways and Other Guided Transport Systems) Regulations 1996 16
2.7 Guidance on sound insulation and noise reduction for buildings: BS8233:2014 16
2.8 Code of practice for noise and vibration control on construction and open sites. Noise BS5228-1:2009 and A1:2014 17
2.9 Airports NPS Tests 17

3. Our Noise Insulation Schemes 19
3.1 Existing Noise Insulation Schemes 19
3.2 Proposed New Residential Noise Insulation Schemes 21
3.3 Community Buildings Noise Insulation Scheme 22
3.4 Impact on Existing Schemes 23

4. Defining Action Levels 24
4.1 Outline 24
4.2 Action Levels 24
4.3 Combined noise sources 25

5. Delivery 26
5.1 Phasing and Transition from existing schemes 26
5.2 Identification of eligible buildings 27
5.3 Application Process 30
5.4 Appeals and Exceptions 33

6. OTHER SCHEMES BEYOND THE NOISE INSULATION POLICY 35
6.1 Proposed Temporary Home Relocation Scheme 35
6.2 Home Relocation Assistance Scheme (HRAS) 36
6.3 Vortex Protection Scheme 38
6.4 Expanded Vortex Protection Scheme 39

Appendix A: Glossary A1

Appendix B: Noise metrics and Action Levels B1

Appendix C: Seven-stage Awareness Programme to inform and encourage applicants C1

1. INTRODUCTION

1.1 The Noise Insulation Policy for Heathrow Expansion Programme

1.1.1 This document sets out the Noise Insulation Policy for the Heathrow Expansion Programme (the Project) to address the requirements of the *Airports National Policy Statement: new runway capacity and infrastructure at airports in the South East of England 2018* (Airports NPS).

1.1.2 The Noise Insulation Policy forms part of the extensive noise control measures included in the Project, to meet the aims of Government noise policy, as laid out in the Airports NPS at paragraph 5.68 (see below). Firstly, there are the mitigation control measures which cover actions ranging from aircraft fleet development, operational procedures, airport layout, airspace design, and night flight management, to managed respite through runway and airspace alternation. These control measures mitigate and minimise potential new adverse noise effects arising from expansion and, for many areas, reduce existing noise from the airport, within the context of Government policy on sustainable development. This Noise Insulation Policy provides compensatory control measures, which in combination with the mitigation controls, sets out to achieve the following:

- Firstly: to meet the Government noise policy to avoid significant adverse effects on health and quality of life that would otherwise newly arise from the expansion proposals, including preventing unacceptable adverse noise effects;
- Secondly: to avoid significant adverse effects on health and quality of life that would otherwise occur after expansion, but would also have occurred if Heathrow did not expand; and
- Thirdly: to more widely compensate for the adverse effects of aircraft noise both newly arising from expansion and that would have occurred if Heathrow did not expand, in line with Heathrow's committed community compensation scheme as set out in the Airports NPS (paragraph 5.245).

1.1.3 The objectives of this Noise Insulation Policy are to achieve the following:

- Set out the basis for Heathrow's noise insulation strategy and the definition and delivery of the Noise Insulation Schemes.
- Address noise from:
    - aircraft movements in the air and activity on the ground,
    - changes to road traffic associated with the airport expansion,
    - changes to rail traffic associated with the airport expansion, and,

- construction noise associated with the expansion programme.

- Describe how the package of Noise Insulation Schemes addresses the requirements of the Airports NPS and specifically the aim set out in paragraph 5.68 to avoid significant adverse effects on health and quality of life.

1.1.4 This document is structured to cover the following:

- the national, international and local policy, standards and guidance background,
- the assessment metrics and action levels that will be used to identify properties eligible for noise insulation,
- the Noise Insulation Schemes, and
- the staged delivery of these Schemes.

1.1.5 This document also includes outlines of the related, non-insulation programmes with respect to the Project – the Construction Temporary Rehousing Scheme, the Home Relocation Assistance Scheme (HRAS), and the Vortex Protection Scheme.

1.2 Heathrow's Noise Insulation Strategy

1.2.1 This Noise Insulation Policy for the Project can be viewed as a part of Heathrow's long-term noise insulation strategy which has three major policy components.

1. Development of our existing noise insulation schemes designed to address our current operations and changing Government policy.
2. Processes are now underway for certain non-expansion (two-runway) airspace changes such as Independent Parallel Approaches (IPA), easterly alternation and redesigning of the Compton departure route.
3. The Noise Insulation Policy for the Heathrow Expansion Programme (the Project) which includes the development of a new third runway and insulation mitigation options required by the Airports NPS.

1.2.2 The same Noise Insulation Schemes and processes will be used to deliver each of these policy components.

2. CONTEXT: POLICY, STANDARDS AND GUIDANCE

2.1 Airports National Policy Statement

2.1.1 The Government designated the "Airports National Policy Statement: new runway capacity and infrastructure at airports in the South East of England" (Airports NPS) in June 2018.

2.1.2 The Airports NPS addresses a range of issues including Heathrow airport expansion and noise insulation. For noise impacts Airports NPS says:

"5.47 The Government wants to strike a fair balance between the negative impacts of noise (on health, amenity, quality of life and productivity) and the positive impacts of flights…

"5.48 The International Civil Aviation Organisation introduced the concept of a 'Balanced Approach' to noise management (resolution A33/7). This is given legal effect in the UK through EU Regulation 598/2014.

…

"5.68 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;
- Mitigate and minimise adverse impacts on health and quality of life from noise; and
- Where possible, contribute to improvements to health and quality of life.

…

"5.244 People are entitled to know what steps will be taken to help protect them against aircraft noise and, where appropriate, to help them to move house.

"5.245 In addition to statutory requirements, Heathrow Airport has publicly committed to a community compensation package comprising a number of more generous offers:

- *…*
- *Following a third-party assessment, to provide full acoustic insulation for residential property within the full single mode easterly and westerly 60dB $L_{Aeq,16hr}$ noise contour of an expanded airport;*
- *Following a third-party assessment, to provide a contribution of up to £3,000 for acoustic insulation for residential properties within the full single mode easterly*

and westerly 57dB $L_{Aeq,16hr}$ or the full 55dB L_{den} noise contours of an expanded airport, whichever is the bigger; and

- *To deliver a programme of noise insulation and ventilation for schools and community buildings within the 60dB $L_{Aeq,16hr}$ contour."*

2.2 Aviation Policy Framework

2.2.1 The Government published the Aviation Policy Framework (APF) in March 2013 which included the statement:

"3.17 We will continue to treat the 57dB $L_{Aeq,16\ hr}$ contour as the average level of daytime aircraft noise marking the approximate onset of significant community annoyance. However, this does not mean that all people within this contour will experience significant adverse effects from aircraft noise. Nor does it mean that no-one outside of this contour will consider themselves annoyed by aircraft noise."

2.2.2 The Draft UK Airspace policy published by the Department for Transport (DfT) in February 2017 and the consultation response that the DfT published in October 2017 has modified the APF.

"Consistent with the Noise Policy Statement for England, our objectives in implementing this policy are to: … limit and, where possible, reduce the number of people in the UK significantly affected by the adverse impacts from aircraft noise." (para 2.69 Oct 2017)

"The government acknowledges the evidence from recent research which shows that sensitivity to aircraft noise has increased, with the same percentage of people reporting to be highly annoyed at a level of 54dB $L_{Aeq,16hr}$ as occurred at 57dB $L_{Aeq,16hr}$ in the past. The research also showed that some adverse effects of annoyance can be seen to occur down to 51dB $L_{Aeq,16hr}$." (para 2.70 Oct 2017)

"We will set a LOAEL at 51dB $L_{Aeq,16hr}$ for daytime and based on feedback and further discussion with CAA we are making one minor change to the LOAEL night metric to be 45dB $L_{Aeq,8hr}$ rather than L_{night} to be consistent with the daytime metric." (para 2.72 Oct 2017).

2.2.3 The Consultation Response also states that the Government:

- *"expects airport operators to offer acoustic insulation to noise sensitive buildings, such as schools and hospitals, exposed to levels of noise of 63dB $L_{Aeq,16hr}$ or more*
- *expects airport operators to offer financial assistance towards acoustic insulation to residential properties exposed to levels of noise of 63dB $L_{Aeq,16hr}$ or more."*

2.2.4 However, the government published the Aviation 2050 consultation in December 2018 which proposes the following noise insulation measures:

- *"to extend the noise insulation policy threshold beyond the current $L_{Aeq,16hr}$ 63dB contour to $L_{Aeq,16hr}$ 60dB.*
- *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 L_{AeqT} 3dB, which leaves a household in the $L_{Aeq,16hr}$ 54dB contour or above as a new eligibility criterion for assistance with noise insulation."*

2.2.5 These proposals have not yet been adopted by government but may need to be considered in the final Noise Insulation Policy submitted with the DCO if they would increase the area of eligibility. The progression of these Government policies (and draft policies) is summarised in Appendix B.

2.3 Noise Policy Statement for England

2.3.1 The Government published the Noise Policy Statement for England (NPSE) in March 2010 and refers to it in the Airports NPS. The NPSE policy aims, that are repeated in the Airports NPS at paragraph 5.68, are:

"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- *avoid significant adverse impacts on health and quality of life;*
- *mitigate and minimise adverse impacts on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life.*"

2.3.2 The NPSE explanatory notes provide guidance on significant and adverse impacts:

"2.20 LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected.

2.21 Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur.

2.22 It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available."

2.3.3 In addition to the above, Planning Practice Guidance-Noise (2014) includes the concept of Unacceptable Adverse Effect Level (UAEL). This is a level of noise exposure that would be perceived as "*intrusive and very disruptive*" and that "*at the highest extreme, noise exposure would cause extensive and sustained changes in behaviour without an ability to mitigate the effect of noise. The impacts on health and quality of life are such that regardless of the benefits of activity causing noise, this situation should be prevented from occurring*."

2.3.4 The LOAEL, SOAEL and UAEL values being applied to the Project are provided in Chapter 17 of the Preliminary Environmental Information Report (PEIR) and will be adopted in this document when published. They are also summarised in Appendix B of this document.

2.3.5 We consider that this Noise Insulation Policy is one aspect of "avoiding" significant adverse noise effects on health and quality of life and "preventing" unacceptable noise effects.

2.4 World Health Organisation Guidelines for Community Noise (1999)

2.4.1 In 1999, the World Health Organisation (WHO) released Guidelines for Community Noise (GCN). These guidelines have informed a wide range of UK standards and guidelines, and contain recommended values for internal noise for specific environments and maximum night time noise levels that remain current.

2.4.2 WHO has also published:

- Night Noise Guidelines 2009 (NNG) which recommend a LOAEL and refer to GCN guideline text as remaining valid, and

- Environmental Noise Guidelines for the European Region 2018 (ENG) which recommend Noise Guideline values which are defined for L_{den} (which includes penalty for evening and night period) and L_{night}.

2.4.3 The WHO publications are guidance only and do not take precedence over Government legislation or policy.

2.5 Noise Insulation Regulations (1975)

2.5.1 The Noise Insulation Regulations provide a schedule of noise insulation measures to be provided if noise levels from a highway or road development are predicted to exceed action levels predicted using the Government method, Calculation of Road Traffic Noise (CRTN). CRTN is a historic calculation method which uses a different metric to those normally used for aircraft noise, $L_{A10,18hr}$, but this metric can be converted to $L_{Aeq,T}$ for normal highway noise and this conversion is described in the PEIR.

2.6 The Noise Insulation (Railways and Other Guided Transport Systems) Regulations 1996

2.6.1 The Noise Insulation (Railways etc) Regulations provide a schedule of noise insulation measures to be provided if noise levels for a rail or similar development are predicted to exceed action levels predicted using the Government method, Calculation of Rail Noise (CRN).

2.7 Guidance on sound insulation and noise reduction for buildings: BS8233:2014

2.7.1 British Standard BS8233 provides guidance on the control of sound in and around new buildings, including noise from aircraft, roads and construction sites.

2.7.2 For residential buildings guideline internal noise levels are provided as annual average levels. BS8233 recognises that it may be desirable to build houses or flats above the guideline values for other reasons, such as access to transport, shopping etc, and that a relaxation of the guidance values may provide reasonable living conditions.

2.7.3 For non-residential buildings, BS8233 refers to a number of sector guidelines, including Building Bulleting BB93 for schools and Health Technical Memorandum HTM 08-01 for hospitals and recommends that a suitably qualified acoustician is retained for specialist uses, such as theatres, concert halls and cinemas.

2.8 Code of practice for noise and vibration control on construction and open sites. Noise BS5228-1:2009 and A1:2014

2.8.1 British Standard BS5228-1 provides guidance on the calculation and control of noise at construction sites and is widely used on minor and major development sites. Annex E of the Code addresses significance of effects with Example 1 being the “A-B-C" method that produces a table of threshold levels at various times of the day and night.

2.9 Airports NPS Tests

2.9.1 This Noise Insulation Policy has been designed so that the DCO will meet the first aim of the Airports NPS 5.68 (and NPSE), which is “*within the context of Government policy on sustainable development: to avoid significant adverse impacts on health and quality of life from noise*.”

2.9.2 The Airports NPS refers to the “Noise Mitigation – Noise Control Hierarchy” and this is discussed in more detail in the PEIR associated with this Airport Expansion Consultation. Within the control hierarchy, noise insulation will be relied upon where other higher priority mitigation is not practical or sustainable. To avoid significant adverse noise impacts, the Noise Insulation Policy will prioritise those properties and populations which will be newly exposed to noise levels above the SOAEL, including any properties which will be newly exposed to noise levels above UAEL.

2.9.3 The SOAEL values for aircraft noise, as identified in the PEIR, are daytime 63dB $L_{Aeq,16hr}$ and night-time 55dB $L_{Aeq,8hr}$ or one additional awakening. The daytime UAEL is 71dB $L_{Aeq,16hr}$ and the night-time UAEL is 66dB $L_{Aeq,8hr}$. All these values are 92-day summer averages. See Appendix A for a glossary of terms and Appendix B for references to night time aircraft noise and other noise sources.

2.9.4 As quoted above, Airports NPS (paragraph 5.245) explicitly reiterates public commitments for noise insulation made by Heathrow which are a key part of the strategy to avoid significant noise impacts for areas newly above the SOAEL.

2.9.5 This Noise Insulation Policy will meet or exceed the minimum requirements of the first aim of Airports NPS 5.68 for the following reasons:

- Homes that will be newly exposed above any SOAEL value in the opening year, will have insulation offered (and installed, if accepted) in advance of the new runway opening.
- As the number of aircraft movements increases after the opening year to a point when the airport’s noise impact is forecast to be highest, homes that will

be newly exposed above the SOAEL values will have insulation offered (and installed, if accepted) in advance of the SOAEL value being exceeded.

- Heathrow will extend the offer of noise insulation to homes that are already exposed to levels above the SOAEL values and will continue to be exposed above the SOAEL values after the new runway opens and as the air traffic to and from the expanded airport increases.
- After opening of the new runway, full insulation (Scheme 1) will be progressively offered to homes out to the Action Level of 60dB $L_{Aeq,16hr}$. As this is lower than the 63dB SOAEL for aircraft, this means more people and properties will be eligible for insulation.
- We have also made a commitment to use a combined contour based on both full, single mode contours, namely the easterly and westerly mode contours. This will produce a noise contour area larger than the area for the actual averaged east-west operations and effectively will treat areas impacted by one mode as if it occurred for the entire year.
- As use of the new runway grows after its 2026 opening, further areas for insulation will be sequenced to treat homes in advance of any air traffic growth and any associated noise forecast to newly exceed SOAEL.

2.9.6 As described in the PEIR, the other two aims of para 5.68 will be addressed by other mitigations, compensations and outcomes.

2.9.7 The second aim to mitigate and minimise adverse impacts on health and quality of life from noise will be addressed by a whole spectrum of noise mitigation measures. These range from promoting the aircraft fleet at Heathrow as the newest and quietest aircraft possible, and operational procedures including runway and airspace alternation to minimise noise levels and maximise predictable respite for communities.

2.9.8 The third aim is to, where possible, contribute to improvements to health and quality of life will be best addressed by our commitment that the expansion programme will achieve fewer people impacted by significant noise than “today” (i.e., 2013, the noise ‘policy baseline’ set by the Airports NPS).

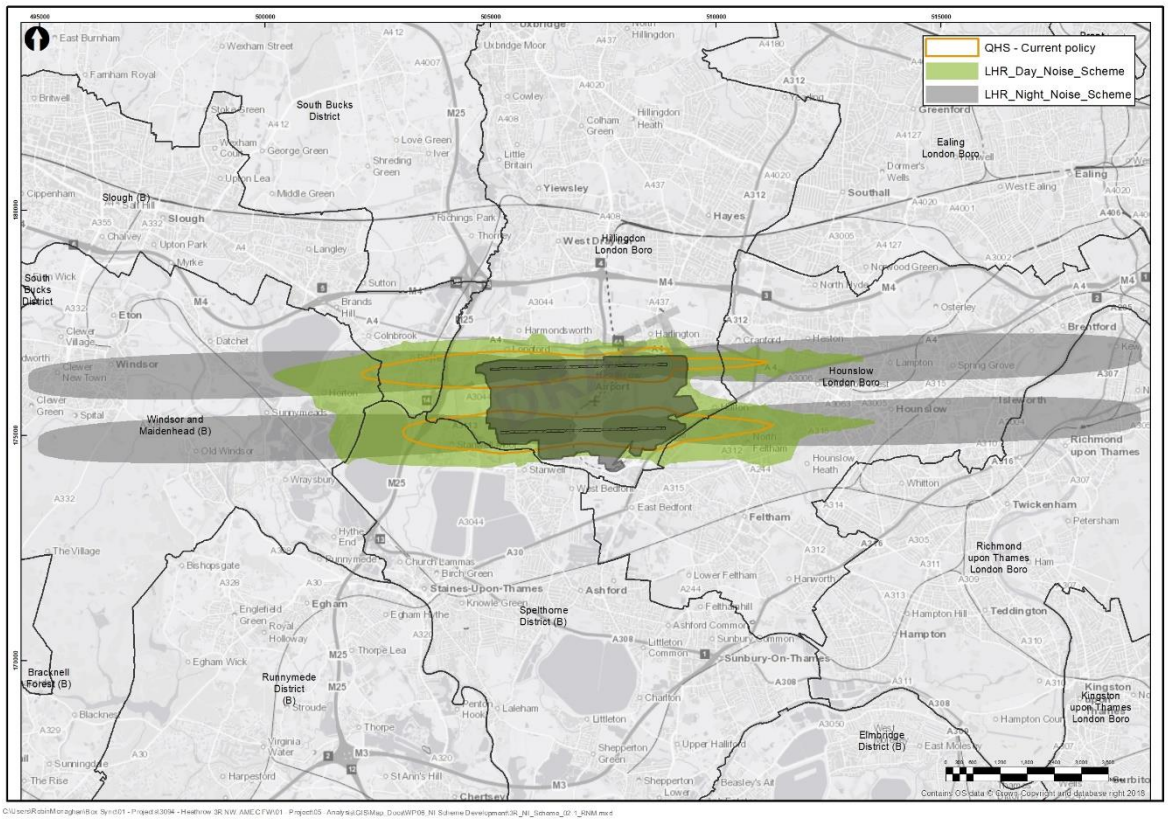
3. OUR NOISE INSULATION SCHEMES

3.1 Existing Noise Insulation Schemes

3.1.1 The new Noise Insulation Schemes associated with the Project will replace the existing noise home insulation schemes including the Quieter Homes Scheme, the Day Scheme and the Night Scheme. The existing scheme boundaries are shown in Figure 3.1 below.

- The Quieter Homes Scheme (QHS) applies to homes based on the 2011 69dB $L_{Aeq,16hr}$ contour. It covers the full cost of carrying out the work which can include loft and ceiling insulation, double-glazing or external door replacements and loft and ceiling over-boarding. (This is practically the same as the new Scheme 1.)
- The (Residential) Day Noise Insulation Scheme (or Day Scheme) is based on the 1994 69dB $L_{Aeq,18hr}$ contour and is designed to protect those homes exposed to the aircraft noise in the day, including in the early morning arrival period before 06:00. These properties are eligible to receive 50% of the cost of replacement windows and external doors, or free secondary-glazing, and free loft insulation and ventilation.
- The Night Noise Insulation Scheme (or Night Scheme) is designed to address the impact of night flights on local residents. The scheme boundary is based on the footprint of the noisiest aircraft regularly operating between 23:30 and 06:00. These properties are eligible to receive 50% of the cost of replacement bedroom or bedsitting room windows, or free secondary-glazing of bedroom or bedsitting room windows, and free loft insulation and ventilation.

Figure 3.1 Boundaries for Existing Noise Insulation Schemes



3.1.2 The Community Buildings Noise Insulation Scheme applies to noise-sensitive buildings around Heathrow that are exposed to a medium to high level of noise (within the 2002 63dB $L_{Aeq,16hr}$ noise contour). This includes hospitals, schools and colleges, nurseries attached to schools and hospices, nursing homes, registered nurseries, libraries and community halls. The scheme pays for buildings to make noise-insulating modifications such as double-glazing, replacement windows and ventilation. Eligible buildings are those in widespread use within the community, where people spend long periods of time, or where they are vulnerable.

3.1.3 Heathrow has two other schemes to assist home owners that are not directly related to noise insulation. The Home Relocation Assistance Scheme which offers financial help to eligible homeowners living in the noisiest areas around Heathrow to move away from the area if they wish. The Vortex Protection Scheme is designed to protect and repair homes around the airport damaged by wind currents from aircraft wing. These are discussed in more detail in Section 6.

3.2 Proposed New Residential Noise Insulation Schemes

3.2.1 The Noise Insulation Schemes are designed to ensure a suitable internal acoustic amenity for habitable rooms as summarised in the table below.

Table 3.1 New Residential Noise Insulation Schemes

Scheme	Noise Source	Description
Scheme 1	Aircraft noise	This includes a full package of noise insulation to habitable rooms, including bedrooms, living rooms, and dining rooms. This may include kitchens, toilets, bathrooms, but does not including porches, conservatories, out buildings and rooms solely for leisure activities. Windows may be upgraded to acoustic double glazing or by the addition of secondary glazing or both. External doors to habitable rooms may be upgraded. Ceilings or lofts may be over-boarded with additional lining. Acoustic thermal insulation batts (or equivalent) may be installed above ceilings in lofts. Suitable ventilation may be provided so that windows can be kept closed in warm weather. The scheme will be prioritised in the following order to: a) prevent exposure above UAEL due to the Project, b) avoid exposure newly above SOAEL due to the project, c) avoid exposure above SOAEL due to the project or existing operations, and d) deliver Heathrow's wider noise insulation commitments
Scheme 2	Road, rail and construction noise	Existing windows may be upgraded with replacement acoustic double-glazed units with "acoustic ventilation" or by the addition of secondary glazing, and external doors to habitable rooms may be replaced with doors that comply with the requirements of the Noise Insulation Regulations. Works are usually only to the façade (side) of the house that is closest to (or has line of sight of) the road or construction site.
Scheme 3	Aircraft noise	This is a £3000 contribution to a package of noise insulation treatment. For example, an owner might choose to replace certain windows or external doors, or install ventilation.

3.2.2 The Noise Insulation Schemes will provide additional noise insulation within properties that are exposed, or likely to be exposed, above the Action Levels set out below in Section 4.2.

3.2.3 Insulation aims to improve the internal acoustic amenity of the property in accordance with NPSE and the Airports NPS. The scheme is not intended to improve the noise environment outside of the property or building e.g. gardens.

3.2.4 To ensure the schemes are sustainable and will provide lasting benefit for people and properties, Heathrow will provide work packages from agreed suppliers with

suitable quality management procedures and aim to meet or exceed the minimum requirements of Airports NPS as set out above.

3.2.5 The schemes will provide “like for like” replacement of existing windows, doors etc, where reasonably practicable. This means that existing PVC windows will be replaced with PVC, aluminium with aluminium, and white with white. Approved contractors may be able to offer upgrades (e.g. timber effect or painted frames) as an extra cost option to the applicant. Cat flaps cannot normally be fitted to acoustic doors and windows but may be moved to doors or walls of non-habitable rooms.

3.2.6 The schemes will not be provided to properties that currently meet or exceed the benefit of the eligible package to avoid disruption without benefit, or even degradation, of existing properties.

3.2.7 Roofs are not replaced in the Noise Insulation Schemes and due to complications associated with existing roof conditions, it is not practical to replace roof windows or skylights. Generally, roof windows are replaced when a vortex protection roof is installed under the Vortex Protection Scheme. (See Section 6).

3.2.8 For practical reasons, ceiling over-boarding is usually undertaken by the home owner or their contractor with guidance provided and costs covered by the Noise Insulation Scheme.

3.3 Community Buildings Noise Insulation Scheme

3.3.1 The current community buildings scheme will be extended to cover community buildings impacted by expanded activity at Heathrow.

3.3.2 Community buildings include schools and colleges, hospitals, hospices and nursing homes, libraries and other public buildings where a large number of people will spend long periods of time or where the use is considered to be noise sensitive.

3.3.3 The scheme will identify potentially eligible community buildings within the contour whose owners will be invited to apply. Unsolicited applications will also be considered.

3.3.4 As per Airports NPS (5.245), the Action Level for schools will reduce to 60dB $L_{Aeq,16hr}$ (for a future operational scenario) compared to the current scheme based on the 2002 63dB $L_{Aeq,16hr}$.

3.3.5 A desktop or drive-by initial assessment may be used to determine if a site inspection is needed. Each eligible community building will receive an assessment to identify a suitable package of measures which will be carried out by an approved installer.

3.3.6 The scheme may include the provision of replacement acoustic double glazing or secondary glazing, external doors and ventilation. Eligible schools will also be invited to apply for grants for adobe buildings which provide outdoor noise-reducing shelter.

3.3.7 Insulation will only be offered if the building is not already insulated to an equivalent level to that of our scheme.

3.4 Impact on Existing Schemes

3.4.1 All residents entitled to claim for the existing schemes will be notified of the scheme closure with a period of at least 12 months during which claims may be lodged before closure.

3.4.2 The Quieter Homes Scheme (QHS) will be expanded to reflect any changes in Government policy before DCO is granted. If the DCO is granted and there is a decision to proceed with construction, then Scheme 1 will replace QHS. The Action Level for Scheme 1 will be lower than the existing QHS, so there will be expanded eligibility. This means homes eligible for the current QHS will be eligible for Scheme 1.

3.4.3 The Day and Night Schemes will be closed down if the DCO is granted and there is a decision to proceed with construction. Property owners in the areas of the schemes will be notified prior to the scheme closure and will also be advised if they are likely to be eligible for the new schemes. They will have the option to apply for the existing scheme before closure or apply for the new schemes when they open. Some areas of both schemes will become eligible for Scheme 1 which is a more complete treatment of the house but may not be delivered until after opening of the new runway. In some areas currently in the Night Scheme, furthest from the airport, night-time noise levels have decreased, and some homes may become eligible for Scheme 3 after the opening of the new runway.

3.4.4 The Community Buildings Noise Insulation Scheme (CBNIS) will be extended and no currently eligible building will lose eligibility.

3.4.5 The Home Relocation Assistance Scheme and the Vortex Protection Scheme will be refreshed to take the Project into account. See Section 6 of this document.

4. DEFINING ACTION LEVELS

4.1 Outline

4.1.1 Action Levels are the noise levels which can trigger the actions in the Noise Insulation Schemes. They are the threshold levels of eligibility for the Project's different schemes and noise sources. The Action Levels will be presented geographically as "contour lines" identifying the boundary of land where the Action Levels are exceeded.

4.1.2 In addition to aircraft noise, the Project will generate construction noise and noise from new or altered roads and railways that may cause potential adverse effects on communities. The Noise Insulation Schemes for each source vary and are described in more detail in Section 3.2.

4.2 Action Levels

4.2.1 The Action Levels for air, road, rail and construction noise, are provided below, based on metrics described in more detail in Appendix B and the PEIR.

Table 4.1: Action Levels for Aircraft, Road, Rail and Construction Noise

Noise Source	Action Level	Noise Insulation Scheme	Requirement Reference
Aircraft Noise	Unacceptable Adverse Effect Level (UAEL) Day time: 71dB $L_{Aeq,16hr}$ Night time: 66dB $L_{Aeq,8hr}$	Scheme 1 (with bespoke insulation package)	PEIR
	Initially, SOAEL values of 63dB $L_{Aeq,16hr}$ day, 55dB $L_{Aeq,8hr}$ night and one additional awakening per night (92-day summer averages). Then the full single mode easterly and westerly 60dB $L_{Aeq,16hr}$ noise contour of an expanded airport	Scheme 1	PEIR/ Airports NPS
	The full single mode easterly and westerly 57dB $L_{Aeq,16hr}$ or the full 55dB L_{den} noise contours of an expanded airport, whichever is the bigger	Scheme 3	Airports NPS
Road Noise	Day time: 63dB $L_{Aeq,16hr}$ Night time: 55dB $L_{Aeq,8hr}$ (and a change of at least 1dB from before expansion)	Scheme 2	PEIR
Rail Noise	Day time: 65dB $L_{Aeq,16hr}$ Night time: 55dB $L_{Aeq,8hr}$ >20 passbys per night: 80dB L_{Amax} <20 passbys per night: 85dB L_{Amax}	Scheme 2	PEIR

Noise Source	Action Level	Noise Insulation Scheme	Requirement Reference
	(and a change of at least 1dB from before expansion)		
Construction Noise	Refer to section 11 of the Draft Code of Construction Practice or Appendix B of this policy.	Scheme 2	CoCP and BS5228

4.3 Combined noise sources

4.3.1 The cumulative effect of different noise sources on health and quality of life is difficult to evaluate, especially where different noise metrics are used.

4.3.2 As a starting point, the noise level for each source (aircraft, road, rail, or construction) will be assessed separately using the relevant Action Level. Where a resident is affected by more than one noise source (for example construction noise and aircraft noise) a cumulative assessment will be undertaken that, as appropriate, will take account of when insulation may be triggered for the different sources and combined effects. Details of the assessment methodology will be defined in the Environmental Statement supporting the DCO application and this document will be updated.

4.3.3 Noise from natural sources, such as wind and rain, is not included in the NPSE definition of environmental noise. Furthermore, other noise sources that are not associated with the airport activity such as existing roads and railways are also excluded from this Noise Insulation Policy. When assessing a house site for noise insulation, any noise measurements or calculations will be undertaken or adjusted to exclude noise sources that are not caused by airport operations or expansion.

5. DELIVERY

5.1 Phasing and Transition from existing schemes

5.1.1 The new noise insulation schemes will replace the existing noise insulation schemes as described above. The stages of the Noise Insulation Policy are shown below in Table 5.1 below.

5.1.2 We will also consider options to assess the effectiveness of the new Noise Insulation Schemes, and to demonstrate our ability to deliver our schemes for subsequent stages.

5.1.3 The staged roll out of programmes may overlap and will ensure all properties likely to be significantly exposed to adverse noise effects will be offered noise insulation before the source of the noise effect is introduced. This staging will also help to avoid long waiting times between applications and fit outs.

Table 5.1 – The Staged Roll-out of Noise Insulation Schemes.

Stage	Period	Homes for Noise Insulation	Scheme
Stage 1	From late 2019 (subject to CAA approval) until DCO application is granted	Homes that are exposed to the highest noise with existing operations, in line with latest Government policy, and this includes homes that would also be exposed to the highest noise with the Project. Also homes potentially exposed to early construction noise as well as existing high aircraft noise. Homes will also be selected in this stage to develop and test our systems and suppliers. (Figure 5.1)	Scheme 1
Stage 2	Between DCO application granted and start of major construction phases	Homes identified as potentially impacted by construction noise, but outside forecast aircraft noise impacted areas. (Figure 5.2 shows the indicative construction noise study areas.)	Scheme 2
Stage 3	Between DCO application granted and new runway opening	Homes forecast to be newly exposed to high, or very high, noise levels from aircraft or the new or altered roads or rail, in stages as the Project progresses.	Scheme 1 and Scheme 2
Stage 4	New Runway opening onwards	Insulation provided in advance for homes forecast to exceed SOAEL for aircraft (i.e. 63dB $L_{Aeq,16hr}$ day and 55dB $L_{Aeq,8hr}$ night) as traffic using the expanded airport grows to a point where the airport's noise impact is forecast to be highest (the peak year as defined in the Environmental Statement). There will also be progressive roll-out of offers to homes at aircraft noise levels from SOAEL down to the 60dB Action Level as airport movements grow.	Scheme 1

Stage	Period	Homes for Noise Insulation	Scheme
		Figure 5.3 has the current estimate of the predicted noise contour for 2027, but revised noise contour forecasts will be published every 5 years. (This is referred to as the Inner Area in the PEIR. We expect this stage to be completed by 2040).	
Stage 5	New Runway opening onwards	There will be progressive roll-out of offers to homes at noise levels down to the 57dB $L_{Aeq,16hr}$ and 55dB L_{den} Action Levels as airport movements grow. Revised noise contour forecasts will be published every 5 years. (This is referred to as the Outer Area in the PEIR.)	Scheme 3

5.2 Identification of eligible buildings

5.2.1 At each stage, the relevant existing or predicted noise contour will be used to identify the properties that may be eligible for the Noise Insulation Schemes. Noise contours will be calculated based on expected air, road, rail and construction traffic movements and the modelling of construction plant noise.

5.2.2 For this consultation, preliminary noise contours are available below and in Chapter 17 of the PEIR. The aircraft noise contours have been developed based on indicative flight paths. These contours are presented to provide an indication of the scope of the Noise Insulation Schemes.

5.2.3 For the DCO application in 2020, updated noise contours will be provided in the Environmental Statement.

5.2.4 The predicted aircraft noise contours will also be updated as part of the statutory airspace flight path options consultation for an expanded Heathrow, currently planned for 2022, and further again in 2023 when the final flights paths are defined.

5.2.5 This will mean that the aircraft noise contours are expected to evolve and be updated as the Expansion scheme design and airspace change process continues to evolve and develop. This may result in some changes to the predicted future contours so that some homes indicated as being within a certain noise contour may later fall outside that contour and vice versa. The aim at each stage will be to reduce the noise impact, in line with the Airports NPS and the ICAO “balanced approach”, which would also reduce or change the homes within the contours, as far as reasonably practicable.

5.2.6 Subsequently, the current noise contours will be published every year (for the previous year), and projected noise contours will be updated every 5 years in conjunction with developments of the Noise Envelope.

5.2.7 This will mean that future eligibility for noise insulation schemes will be continually reviewed and residents will be informed if they are likely to be eligible within 5 years. Where a 5-year review identifies that a contour may reduce and properties may not be eligible in future, the scheme will remain open for at least 12 months after the property ceases to be within a relevant contour.

5.2.8 In densely developed areas such as those with terraced homes, there are likely to be adjacent properties exposed to similar noise levels with one property inside the contour whilst its neighbour outside. For this policy any residential property with any part of its curtilage within the contour will be assessed to be within the contour.

Figure 5.1 – Stage 1 – Prior to DCO Grant

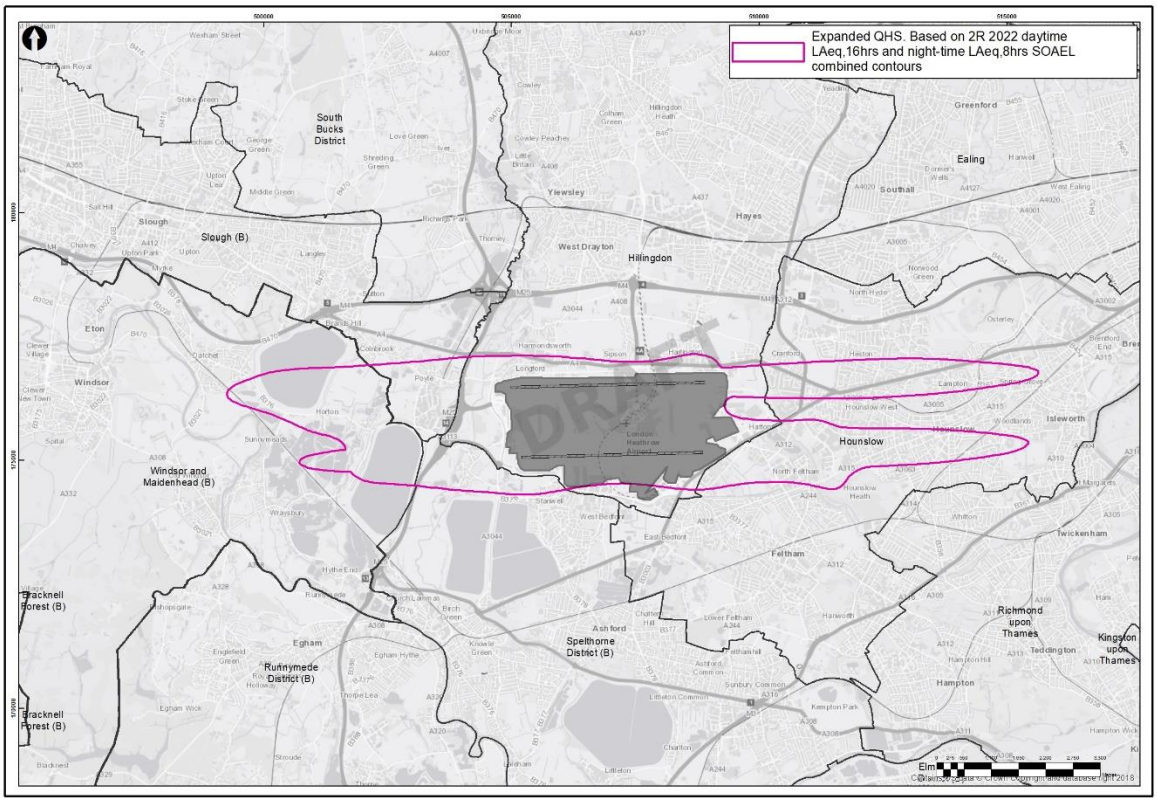


Figure 5.2 – Stage 2 – Indicative Construction Noise Study Area

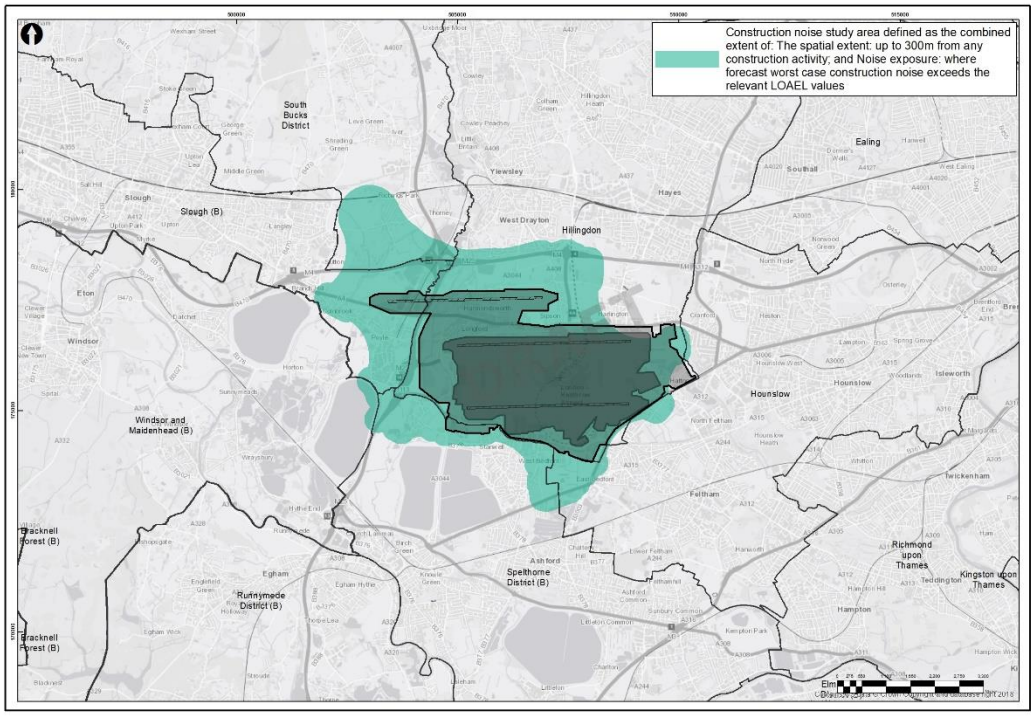
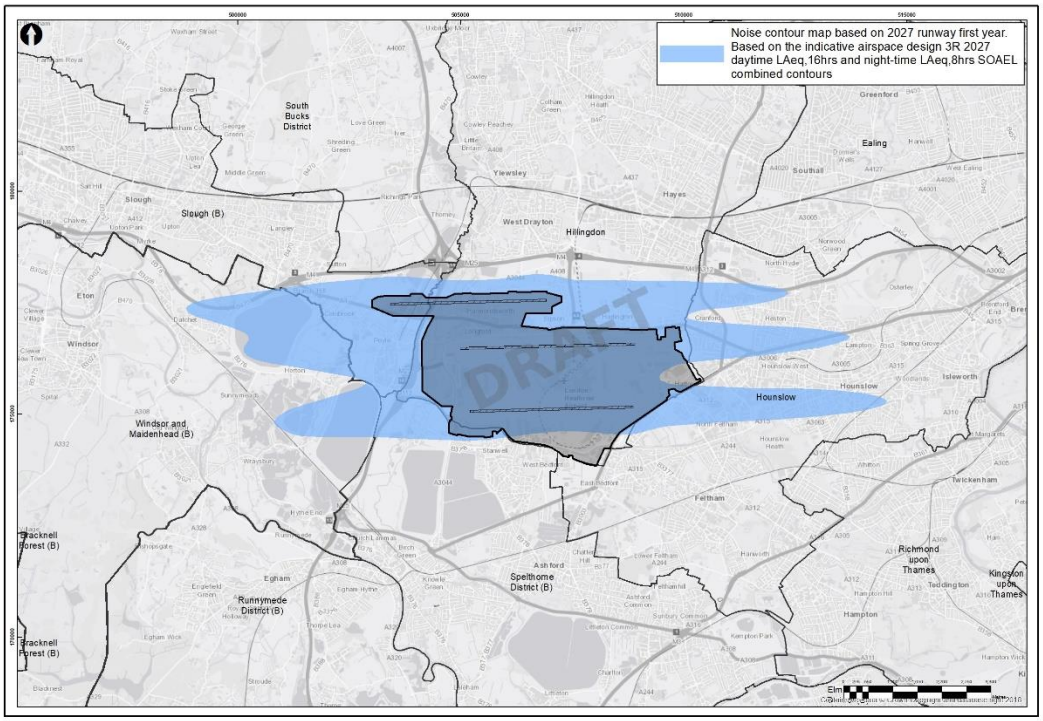


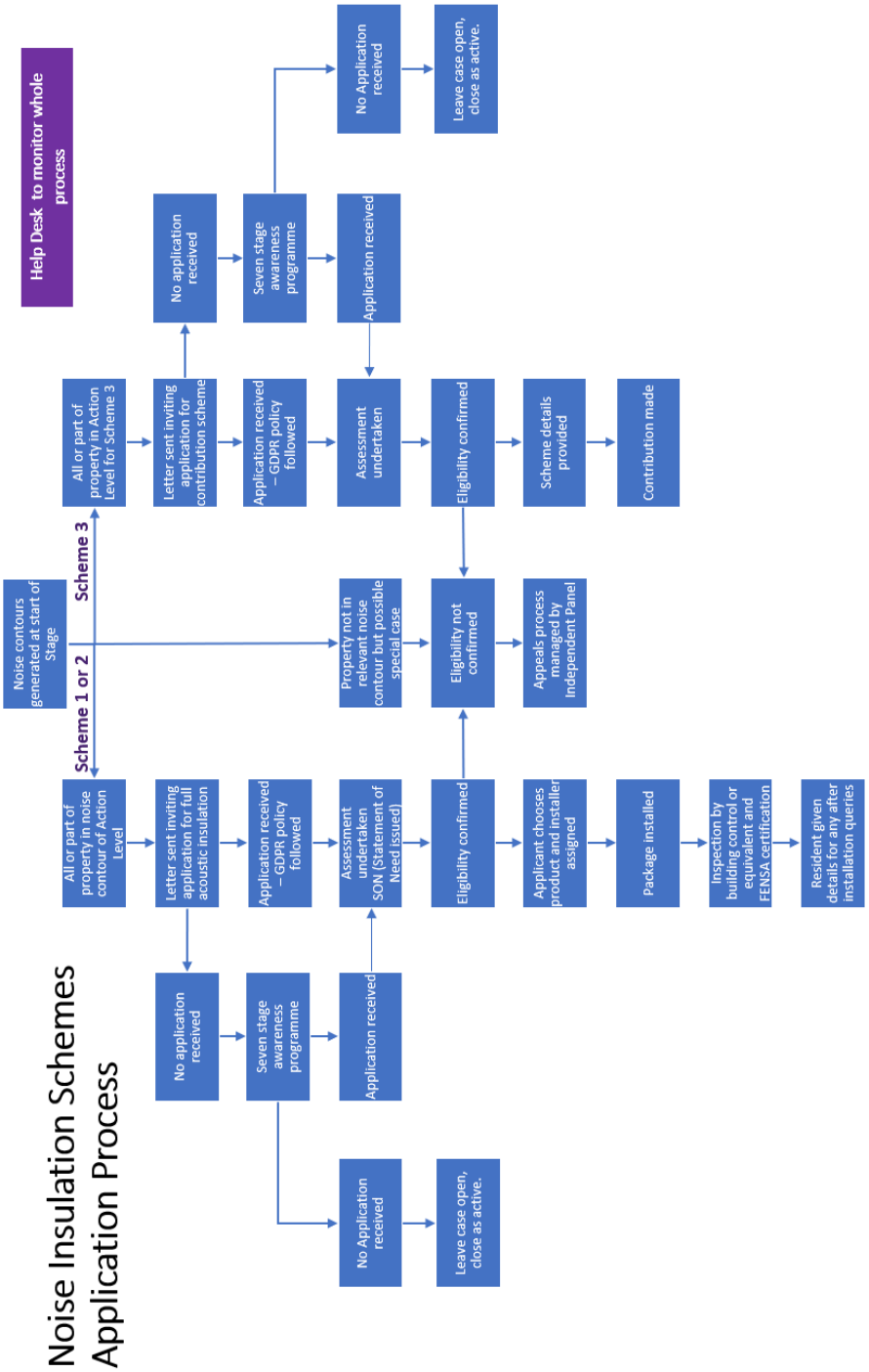
Figure 5.3 – Stage 3 – Indicative Noise contour map based on 2027 runway opening year



5.3 Application Process

5.3.1 The process for delivering the Noise Insulation Schemes is summarised in a flow chart in Figure 5.4.

Figure 5.4 – Application Process Flow Chart



5.3.2 At each stage, or at intervals within a stage, the owners of properties identified as within the relevant noise contour will be contacted by post and advised that they are eligible to apply for the scheme.

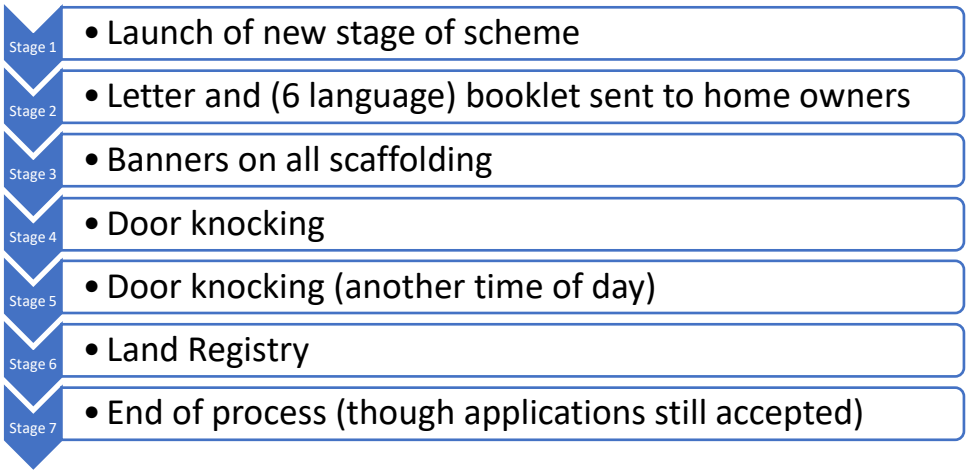
5.3.3 Where a property is rented, the tenant must obtain the permission of the property owner to apply for the scheme. This is for legal reasons.

5.3.4 Although Heathrow will seek to identify all eligible people and invite them to apply, a helpdesk will be available for people to check if they are eligible to apply.

5.3.5 The invitation to property owners will be supported by a seven-stage programme that is designed to promote awareness of the scheme and encourage applications. The seven-stages are outlined in a flow chart in Figure 5.5 and Appendix C.

5.3.6 If the homeowner does not respond during this seven-stage process, the application will be marked as dormant unless the property is within the UAEL contour. The homeowner may apply at a later date (if still eligible) but we cannot then guarantee that the insulation will be installed before the noisy activity starts.

Figure 5.5 Seven-stage awareness programme



5.3.7 Once an application has been received and a property owner has registered for the scheme, an assessment of the property will be carried out by the Assessor, a third-party organisation appointed by Heathrow. An initial desktop or drive-by assessment may be used to identify if a detailed inspection is required.

5.3.8 The initial assessment will address the following questions:

- Is the applicant entitled to apply for the property (the homeowner or appointed agent)?
- Is the property within a relevant noise contour?
- What is the relevant scheme and is there a priority for delivery?

- Has the property benefited from a previous scheme? What is the condition of the property?
- What works or options would be offered under the relevant scheme?
- Are any consents required for the works?
- Are there any special considerations?

5.3.9 Once the Assessor confirms eligibility, the property owner will be provided with scheme details and a list of approved installers or processes to enable work to take place. For Scheme 1 this will normally be summarised in a Statement of Need (SON) based on the house construction external noise levels, and priority.

5.3.10 Records will be made of all properties contacted as eligible, persons making applications under the scheme, the outcome of the assessment, and the satisfactory completion of the package, if provided.

5.3.11 Heathrow will seek to provide information to home owners, house purchasers or their agents and tenants, on request, concerning the eligibility of properties for noise insulation schemes, subject to data protection and confidentiality requirements. It is for this reason the database of information is managed by an address rather than the owner's or resident's name.

5.3.12 Properties eligible for the Scheme 3 contribution to noise insulation will be required to use a supplier approved by Heathrow to ensure suitable quality management.

5.3.13 After the completion of works, auditing will be conducted to demonstrate compliance. This will include performance inspection or tests of a sample range of properties.

5.3.14 A dedicated support team will be provided to assist applicants throughout the process, including people needing special assistance, and to investigate any complaints during and after completion. Applicants will also be able to appeal to the Independent Panel. (See Section 5.4.)

5.3.15 Reasonable time needs to be allowed for applicants to be identified, for applicants to consider and apply for the scheme, to receive applications and determine eligibility, and to carry out the works. Therefore, the Noise Insulation Schemes will open in advance of the relevant expected noise change. It is also possible that applicants may defer, perhaps hoping that they will find the noise acceptable and avoid the disruption of the works. The schemes will therefore remain open for at least a year after the relevant expected noise change occurs.

5.3.16 Where consents are required for the installations proposed by the Noise Insulation Schemes, for example, planning, listed building or conservation area consents, and building control, the appointed contractor and the Heathrow support team will

assist the applicant in obtaining the necessary consents[1]. It is normally the responsibility of the homeowner to obtain these consents, but in some circumstances support with consent applications could be provided.

5.4 Appeals and Exceptions

Applications from non-eligible properties

5.4.1 Although Heathrow will seek to identify all eligible home owners and invite them to apply, a help desk will support other people who wish to check eligibility to apply. These may be people who are not in the current stage, or who are outside the contours, or who have a special case for consideration.

Appeals

5.4.2 An independent appeal process will be available to applicants who do not accept an eligibility or Statement of Need (SON) decision. After the initial response by the Assessor, an appeal may be made to an Independent Panel who will carry out an initial review, consider if further action is appropriate and advise the complainant of their decision.

5.4.3 Heathrow will set up and fund the Independent Panel in consultation with other community and local authority stakeholders, modelled on that set up for the Thames Tideway project.

Exceptions

5.4.4 The policy and schemes described above meet or exceed the minimum requirements of the Airports NPS and NPSE, and provide sustainable and practical schemes for the majority of people and properties. However, there may be exceptional cases where a bespoke alternative performance standard to meet the requirements could be considered. Examples may be:

- a person with a specific health or disability issue associated with noise,
- a property which is not suitable for the standard schemes, such as some listed or historic buildings,
- a property exposed to very high noise levels above the UAEL of 71/66dB $L_{Aeq,16/8hr}$ for aircraft noise.

5.4.5 Bespoke assessments and schemes are inherently costly and can be disproportionate in the effort and funds required for assessment and design compared to delivery and therefore may not be considered practicable or

[1] Normally the property owner or resident will apply for the consent and retain the benefit of any permissions granted.

sustainable but can be appropriate in exceptional circumstances. The Independent Panel would review cases where bespoke assessments may be justified and recommend the most appropriate treatment options. Where substantial works are required, temporary relocation may be offered on a similar basis to that offered for construction noise.

5.4.6 For the very few properties that will be newly exposed above the UAEL, where an application is not received or an offer accepted, we may need to obtain compulsory rights to provide bespoke treatments to prevent exposure above UAEL. Such treatments may also need to include temporary rehousing to allow the work to be done to those homes. This will be addressed in the DCO application.

6. OTHER SCHEMES BEYOND THE NOISE INSULATION POLICY

In addition to the noise insulation schemes in this draft Noise Insulation Policy, Heathrow has two other existing noise and vortex related schemes that will be refreshed. These are the Home Relocation Assistance Scheme which offers financial help to eligible homeowners living in the noisiest areas around Heathrow to move away from the area if they wish; and the Vortex Protection Scheme which is designed to protect and repair homes from around the airport damaged by wind currents from aircraft wings.

Heathrow will also introduce a Temporary Rehousing Scheme for those most impacted by short term construction noise. These schemes are summarised in this section for reference.

6.1 Proposed Temporary Home Relocation Scheme

6.1.1 This section sets out a draft proposal for a Temporary Home Relocation Scheme for those most impacted by short term construction noise.

6.1.2 Where, after applying best practical means mitigation, construction noise at any residential receptor is predicted to exceed the construction noise insulation Action Levels for a temporary period, Heathrow would offer an option of temporary re-housing for the duration of the works. The Action Level will be based on the UAEL for construction noise of around 75 to 85dB $L_{Aeq,T}$, as detailed in Appendix B.

6.1.3 Heathrow will contact the owners or occupiers of properties affected before the works are due to start to allow residents to find alternative property and move before the noisy works begin. Temporary re-housing could be a similar rental property or a hotel.

6.1.4 Heathrow will provide a help desk and work with local property agents to identify suitable temporary accommodation and support applicants who choose to find their own temporary housing. Applications will be assessed for:

- Property location and eligibility
- Ownership/occupancy
- Accommodation requirements including any special needs or adaptations

6.1.5 Eligible applicants will receive a Statement of Need (SON) setting out what range of temporary accommodation will be provided within the scheme, details of local letting agents, removal and storage companies, and the Heathrow helpdesk support.

6.1.6 Subject to eligibility, Heathrow would pay the reasonable costs of:

- Equivalent temporary accommodation based on reasonable market rates,
- Packing and removal costs, and storage of personal goods if required
- Kennel/cattery or equivalent housing for pets,
- Works to secure the vacated property when empty, including disconnection and re-connection of services, and
- Additional insurance for temporary accommodation and vacated property.

6.1.7 Applicants will be able to make their own arrangements, but payments will be audited and claimants must receive approval from Heathrow of the supplier and of the costs before using suppliers not previously audited by the scheme.

6.1.8 Heathrow will usually seek to support temporary accommodation as close as practical to the vacated property, but sufficiently distant to avoid significant noise impacts. Where temporary accommodation is a significant distance from the permanent location, assistance with travel costs (e.g. workplace or school) may be provided.

6.2 Home Relocation Assistance Scheme (HRAS)

6.2.1 Since 2002, Heathrow has offered the Home Relocation Assistance Scheme to offer financial help to eligible homeowners living in the noisiest areas around Heathrow to move away from the area if they wish. It was developed in consultation with local residents, businesses, campaign groups and local authorities. People who meet the criteria can get financial assistance with the costs of moving.

6.2.2 This current HRAS scheme applies to residential properties around Heathrow that are exposed to a high level of noise defined for this scheme as lying within the 2002 69dB $L_{Aeq,16hr}$ noise contour.

6.2.3 The criteria for eligibility including the following:

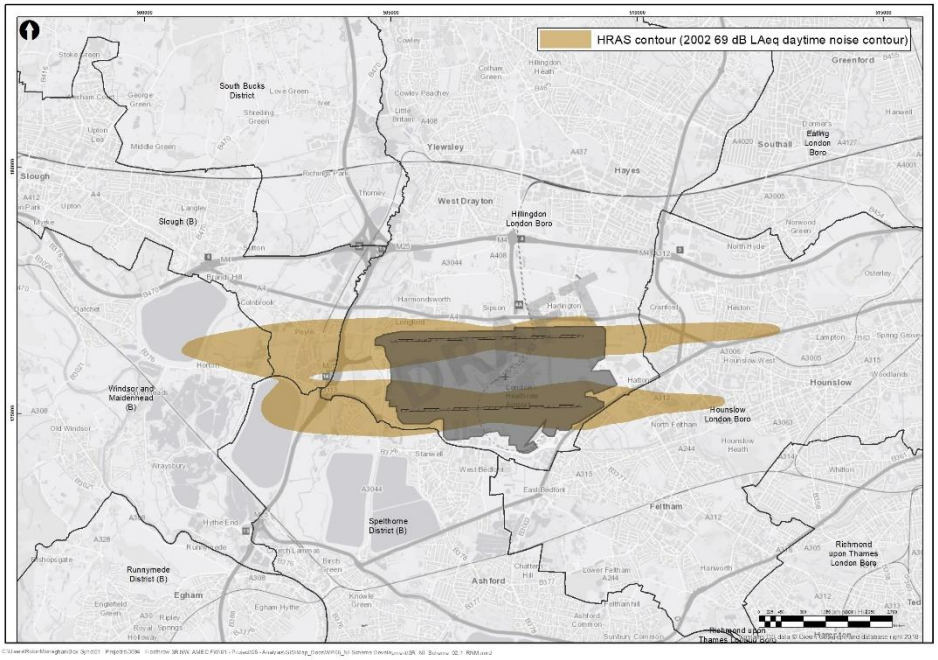
- The applicant must own the property when applying. (If the applicant lives elsewhere, it must be the only property in the UK that is owned by the applicant.)
- The applicant must be planning to move to a quieter area outside the boundaries of the scheme.
- The applicant must not retain a beneficial interest in, or right of occupation to, the property after moving.

- Residents must have owned or be living in the property prior to February 2005.
- Long-term tenants (with at least three years remaining on their lease) may also be eligible for assistance if the property they are renting is being sold. However, short-term tenants are not eligible for the scheme.

6.2.4 Homeowners receive a lump sum of £5,000, plus 1.5% of the sale price of the property (up to a maximum of £12,500). There is only one payment per property. No other assistance is provided and the property is no longer eligible for a Noise Insulation Scheme[2]. The property is sold in the open market by the owner.

6.2.5 More information on this current scheme and its eligibility criteria are provided by a Noise Helpdesk (0800 344844) or email communityschemes@heathrow.com

Figure 6.1 – Boundary for Existing HRAS



6.2.6 Heathrow is taking the opportunity to enhance the Home Relocation Assistance Scheme. The eligibility criteria will remain the same.

6.2.7 The compensation values are under review. Under the refreshed HRAS, eligible homeowners would receive the same lump sum of £5,000 and an additional 5% of the sale price of the property, up to a new higher maximum cap. There is only one payment per property.

[2] Under the "agent of change" and "caveat emptor" principles, the open market buyer of a property should consider any noise insulation requirements within their purchase price offer. For houses purchased by Heathrow, any noise insulation scheme would normally be provided before the property is returned to the market.

6.2.8 HRAS will apply to the areas to east, west and possibly south of the existing two runways based on the $L_{Aeq,16hr}$ 69dB noise contour. (See below for discussion of the year of the applicable contour.)

6.2.9 As with the Noise Insulation Schemes, HRAS eligibility will require that some part of a property lies within the relevant, calculated noise contour.

6.2.10 More information about a refreshed HRAS will be available later this year. Eligibility for HRAS will continue to be based on the 69dB $L_{Aeq,16hr}$ contour from 2002. It can be noted that since 2002, the annual noise contour at Heathrow has continually decreased is size, which means that some houses that qualified for HRAS in the past, now lie outside the current 69dB contour.

6.2.11 In 2021, if the DCO is granted and there is a decision to proceed with construction, HRAS will be based on the 69dB $L_{Aeq,16hr}$ contour for 2020 (because the 2021 contour will not be available). With expansion, however, there may be years when the noise contour could be different to the previous year. Therefore, the intention is that HRAS will be based on the noise contour for 2020 or the projected contours for 2025, whichever is larger. Subsequently, from 2026, HRAS will be based on noise contour for 2025 and the projected contours for 2030, whichever is larger.

6.2.12 In this manner, a homeowner will be able to make a decision on selling and claiming the HRAS scheme, based on the highest noise levels expected for five years.

6.2.13 If with the publication of a new HRAS contour, a property newly falls outside, previous eligibility for the scheme will be considered for 12 months.

6.3 Vortex Protection Scheme

Existing Vortex Protection Scheme

6.3.1 A vortex is a circulating current of air generated by the wings of an aircraft. It can sometimes strike and damage the roofs of houses located under a flight path. Pitched roofs with loose-laid tiles are prone to vortex damage. For many years, Heathrow has had a Vortex Protection Scheme to both repair and protect homes around the airport.

Damage Repair

6.3.2 If a home has been damaged by a vortex strike, Heathrow operates a 24-hour emergency service and will repair it. Although legal liability for vortex damage rests with the airlines, Heathrow voluntarily funds this scheme as part of its commitment to its local communities.

6.3.3 Every house, school, church or hospital affected by a vortex strike is eligible for the Vortex Protection Scheme. This includes home situated above commercial properties. However, the scheme does not cover damage to other property, such as cars, from roof tiles dislodged by a vortex.

6.3.4 An assessor will inspect a roof reported as damaged. The damage caused by vortex strikes is very specific and the assessor will quickly be able to confirm whether one has occurred. Once approved, remedial repairs to the roof are carried out at no cost to the home owner.

Vortex Protection

6.3.5 If a roof is repaired under the Vortex Protection Scheme, the property is eligible for permanent protection. This involves strengthening the roof by fixing down tiles with metal clips that have passed stringent wind tunnel tests – this has proven to be the most effective way to protect roofs from vortex damage. This work will be completed as soon as possible and free of charge.

6.3.6 Because the majority of vortex strikes are concentrated in small areas near the end of runways, Heathrow offers blanket vortex protection for homes in these high-risk areas. This currently includes streets where 50% of the homes on a given road have been struck, where all of the homes are invited to register under a blanket scheme.

6.3.7 To date, no further vortex damage has been recorded at any home that has had its roof strengthened under the Vortex Protection Scheme.

6.4 Expanded Vortex Protection Scheme

6.4.1 For the Project, a new blanket area based on the new runway layout has been defined that identifies homes where vortex damage may occur. After granting of the DCO and a decision to proceed, Heathrow will undertake vortex protection of all of the roofs in the defined area that are eligible within a blanket roll out.

6.4.2 After opening of the new runway expected in 2026, the Vortex Protection Scheme will continue as it does today. We will respond to reports of vortex damage, and areas with many confirmed reports of damage will be considered for blanket protective treatments.

APPENDIX A: GLOSSARY

Term	Definition
Airports NPS (or ANPS)	Airports Noise Policy Statement (2018)
APF	Airports Policy Framework
BS 5228	British Standard 5228 (2014): Code of practice for noise and vibration control on construction and open sites Part 1: Noise.
BS8233	British Standard 8233 (2014): Guidance on sound insulation and noise reduction for buildings
CAA	Civil Aviation Authority
CoCP	The Draft Code of Construction Practice included in the current consultation documents.
CRTN	Calculation of Road Traffic Noise – a guidance document for road noise referred to in the Noise Insulation Regulations
CRN	Calculation of Railway Noise – a guidance document for rail noise referred to in the Noise Insulation Regulations
dB (or dBA)	Decibel (usually A-weighted to approximate the response of the human ear.) is used to measure noise level on logarithmic scale (relative to a standard reference.)
DCO	Development Consent Order
DfT	Department for Transport
Double glazing	This is a window pane with two sheets of glass giving better noise insulation (and thermal insulation) performance than a pane of single glazing. The double glass units are factory sealed and installation will usually require the removal of the existing windows and frames. Acoustic double glazing, for example using laminated glass, can provide better noise reduction than standard thermal double glazing.
ENG	Environmental Noise Guidelines for the European Region (2018)
GCN	Guidelines for Community Noise (WHO 1999)
The Project	Heathrow Expansion Programme
HRAS	Home Relocation Assistance Scheme
ICCAN	Independent Commission on Civil Aviation Noise
L_{A10} or L_{10}	The noise level exceeded for 10% of a measurement period. This is traditionally used to measure road traffic noise.
$L_{Aeq,16hr}$	The noise level averaged over the 16-hour day period (07:00-23:00) and over the 92-day summer period. This day time aircraft noise metric has been used in the UK since the 1980's.
$L_{Aeq,8hr}$	The noise level averaged over the 8-hour night period (23:00-07:00) and over the 92-day summer period. This night time aircraft noise metric has been used in the UK since the 1980's.
$L_{Aeq,T}$ or $L_{eq,T}$	The energy equivalent noise level over a specified period, T, and A-weighted to approximate the response of the human ear.
L_{den}	The annual average energy equivalent noise level, A weighted to approximate the frequency response of the human ear and time weighted for day, evening and night time periods. This annual aircraft noise metric was adopted as the standard noise metric in the EU in 2002.

L_{Amax} or L_{max}	The maximum noise level occurring during a measurement period, A weighted to approximate the frequency response of the human ear.
L_{night}	The A-weighted noise level averaged over the 8-hour night period (23:00-07:00) and over the calendar year.
LOAEL	Lowest Observable Adverse Effect Level
NNG	Night Noise Guidelines (WHO 2009)
Noise Insulation Policy	The policy set out in this document to address the Airports NPS requirements for the Heathrow Expansion Programme, The Project.
Noise Insulation Regulations	Noise Insulation Regulations (1974) as amended by Noise Insulation Regulations (Amended) 1988 and The Noise Insulation (Railways and Other Guided Transport Systems) Regulations 1996
Noise Insulation Schemes	The 3 schemes or levels of acoustic treatment for aircraft, road, rail and construction noise set out in this Policy.
Noise Insulation Strategy	Heathrow's wider and long-term approach to the insulation of homes and community buildings for existing activities, airspace changes and the Expansion Project.
NPPF	National Planning Policy Framework (2019)
NPSE	Noise Policy Statement for England
PPG or PPGN	Planning Practice Guidance-Noise (2014)
The Project	The Heathrow Expansion Programme
Secondary glazing	This is an upgrade of the acoustic performance of an existing window, by the installation an addition glazing pane in its own frame on the existing sill of the window.
SOAEL	Significant Observable Adverse Effect Level
SON	Statement of Need
UAEL	Unacceptable Adverse Effect Level
WHO	World Health Organisation

APPENDIX B: NOISE METRICS AND ACTION LEVELS

Aircraft Noise [92-day summer average levels unless noted otherwise]				
Level	Daytime dB $L_{Aeq,16\ hr}$	Night time dB $L_{Aeq,8\ hr}$	Event dB L_{Amax}	Policy Source
"*approximate onset of significant community annoyance*"	54			APF (2013) as amended by Consultation Response on UK Airspace Policy (2017)
LOAEL	51	45		Air Navigation Guidance (2017) and PEIR
Financial assistance toward insulating homes and schools	63			Consultation Response on UK Airspace Policy (2017)
SOAEL	63	55	One additional awakening per person, per night	PEIR
Proposed new expectation for financial assistance toward insulating homes and schools	60			Draft Aviation Strategy 2018
UAEL	71	66		PEIR
Action Level for Scheme 1	The full single mode easterly and westerly 60dB $L_{Aeq,16hr}$ noise contour of an expanded airport		One additional awakening per night	
Action Levels for Scheme 3	The full single mode easterly and westerly 57dB $L_{Aeq\ 16hr}$ or the full 55dB L_{den} noise contours of an expanded airport, whichever is the bigger		One Additional awakening per night	Airports NPS (5.245)
Proposed Govt new expectation for financial assistance toward insulating homes	An increase of 3dB compared to before expansion which leaves a household in the 54dB $L_{Aeq,16hr}$ contour			Draft Aviation Strategy 2018

Road Noise				
Level	Daytime $L_{Aeq,16\ hr}$	Night time $L_{Aeq,8\ hr}$	Event	Source
LOAEL	50	40		PEIR
SOAEL	63	55		PEIR
UAEL	71	66		PEIR
Action Levels for Scheme 2	63/55dB $L_{Aeq\ 16/8\ hr}$ (and a change of at least 1dB from before expansion)			PEIR and Noise Insulation Regulations
Rail Noise				
Level	Daytime $L_{Aeq,16\ hr}$	Night time $L_{Aeq,8\ hr}$	Event L_{Amax}	Source
LOAEL	50	40	60	PEIR
SOAEL	65	55	80 (>20 events) or 85 (<20 events)	PEIR
UAEL	71	66		PEIR
Action Levels for Scheme 2	65/55dB $L_{Aeq\ 16/8\ hr}$ (and a change of at least 1dB from before expansion)			PEIR and Noise Insulation Regulations

Construction Noise

In line with Section 11 of the draft CoCP, to be eligible the dwelling must be one in which the predicted or actual noise exceeds any of the relevant thresholds in CoCP Table 11.1 for:

- A period of 10 or more days of working in any 15 consecutive days during construction, or
- A total of 40 days or more in any 6 consecutive months during construction

The noise thresholds for both construction and noise insulation are set out in the Table below:

Day	Time (hours)	Averaging Period, T	Noise Insulation Action Level $L_{Aeq,T}$ (dB)*	Construction Temporary Rehousing Action Level $L_{Aeq,T}$ (dB) *
Monday to Friday	0700 – 0800	1 hour	70	80
	0800 – 1800	10 hours	75	85
	1800 – 1900	1 hour	70	80
	1900 – 2200	1 hour	65	75
Saturday	0700 – 0800	1 hour	70	80
	0800 – 1300	5 hours	75	85
	1300 – 1400	1 hour	70	80
	1400 – 2200	1 hour	65	75
Sunday & Public Holiday	0700 – 2200	1 hour	65	75
Any night	2200 – 0700	1 hour	55	65

*	DCO Project construction noise only. Trigger levels are defined as 1m in front of the closest façade of a habitable room. Where measurements are used, they will be taken either at the façade or in free-field. A façade correction will be applied to any free-field measurements to establish the façade level.
*	Where the current ambient noise level is greater than the noise insulation trigger level: 1. the ambient noise level will be used as the noise insulation trigger level 2. the temporary rehousing trigger level will be the ambient noise level +10dB.

APPENDIX C: SEVEN-STAGE AWARENESS PROGRAMME TO INFORM AND ENCOURAGE APPLICANTS

Stage 1: Launch of New Stage

Public awareness of the launch of a new stage of noise insulation will be driven through notices posted at the following – Community Centres, Churches, Local MP's and Schools.

Stage 2: How individual residents are made aware of Heathrow's Noise Insulation Scheme

All property owners that qualify for Heathrow's current stage are individually written to explaining the scheme in detail. A comprehensive booklet written in six languages will be sent to all homes identified within the relevant contour – English, Arabic, Hindi, Polish, Punjabi and Urdu.

Every effort is made to ensure that qualifying residents are able to understand the booklets that outline the scheme, key facts, explain proposed works and most importantly who to contact should further information be required to clarify what is in the booklet and answer any questions.

Stage 3: Banners on all scaffolding

During works on a property, scaffolding set up at a home being fitted out will include a banner displaying. Neighbouring properties will be able to that it is a Heathrow related scheme and neighbours will be encouraged to phone up, investigate their eligibility and register for the scheme.

Stage 4: Door knocking

Staff 'door knock' resident's properties that are eligible for the scheme to speak directly with them and hand over another booklet that explains the scheme in detail. This will give the residents the opportunity to ask any questions that they may have as a result of the scheme being discussed. In the event that there is nobody home at the time of the visit, another booklet will be posted to drive awareness of the Noise Insulation Scheme.

Stage 5: Door knocking

Stage 4 is repeated at a different time of day. If, for example, a property was originally visited in the morning then the second visit would be in the afternoon to make every effort to speak with the resident.

Stage 6: Land Registry

Heathrow contact the Land Registry with a view to contacting landlords whose homes qualify for NIS. A comprehensive booklet will be posted to further drive awareness of NIS to help drive registrations.

Stage 7: End of process

Make a record that all awareness processes have been completed. The residents/ landlords still have the opportunity to come forward as long as they are still within the specified noise contour. The purpose of documenting is to demonstrate that all seven stages have been processed.

 © Heathrow Airport Limited 2019

There are lots of ways you can contact us or find out more

Find all the consultation information on our website aec.heathrowconsultation.com

Email any questions about the consultation to info@heathrowconsultation.com

Follow @LHRconsultation to stay up to date on event details

Call our freephone number 0800 307 7996 (open Monday to Friday, 9am-6pm)

If you would like a large text or alternative format of this document, please contact 0800 307 7996 or email info@heathrowconsultation.com



MIX
Paper from responsible sources
FSC® C012321

AIRPORT EXPANSION CONSULTATION

Heathrow

YOUR LONDON AIRPORT
Gatwick



GATWICK AIRPORT LIMITED

Environmental Noise Directive

Noise Action Plan 2019–2024

Annex Document



CONTENTS

00

ANNEX 1	GLOSSARY OF TERMS	7
ANNEX 2	EXTRACT FROM THE GUIDANCE FOR AIRPORT OPERATORS BY DEFRA	11
ANNEX 3	STRATEGIC NOISE MAPS 2016	14
ANNEX 4	STATISTICAL INFORMATION	20
ANNEX 5	COMPLAINT DATA	22
ANNEX 6	SUMMARY OF LIMIT VALUES IN PLACE	28
ANNEX 7	GENERAL MAPS	31
ANNEX 8	FINANCIAL INFORMATION	45
ANNEX 9A	FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE	46
ANNEX 9B	FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE	68
ANNEX 9C	FEEDBACK RECEIVED REGARDING THE FINAL VERSION OF THE DRAFT NOISE ACTION PLAN DURING THE THIRD STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE	89
ANNEX 10	THE RESULTS OF PREVIOUS NOISE MAPPING	101
ANNEX 11	SUMMARY PERFORMANCE REPORT OF THE PREVIOUS NOISE ACTION PLAN	104
ANNEX 12	COMPARISON OF OLD AND NEW ACTION PLAN ACTIONS	106
ANNEX 13	DETAILS OF THE REVISION PROCESS OF THE DRAFT NOISE ACTION PLAN AS COMMUNICATED TO THE VARIOUS NOISE GOVERNANCE GROUPS	121
ANNEX 14	ADDENDUM TO THE 2019-2024 END NOISE ACTION PLAN	123
ANNEX 15	ADOPTION OF THE 2019 – 2024 END NOISE ACTION PLAN	125
ANNEX 16	KEY STATISTICS 2018	126

TABLE OF FIGURES

FIGURE 1	DEFRA STRATEGIC NOISE MAPS, LDEN 2016	14
FIGURE 2	DEFRA STRATEGIC NOISE MAPS, LDAY 2016	15
FIGURE 3	DEFRA STRATEGIC NOISE MAPS, LEVENING 2016	16
FIGURE 4	DEFRA STRATEGIC NOISE MAPS, LAEQ 16 2016	17
FIGURE 5	DEFRA STRATEGIC NOISE MAPS, LNIGHT 2016	18
FIGURE 6	STATISTICAL INFORMATION IN SUPPORT OF THE NOISE ACTION PLAN	20
FIGURE 7	THE NUMBER OF INDIVIDUAL COMPLAINANTS AND RECORDED COMPLAINT NUMBERS IN 2017	23
FIGURE 8	THE TOP 20 LOCATIONS FOR COMPLAINTS IN 2017	24
FIGURE 9	THE ANALYSIS OF THE DISTRIBUTION OF COMPLAINTS AGAINST AIRCRAFT TYPES COMPARED TO TOTAL MOVEMENTS 2017	25
FIGURE 10	THE ANALYSIS OF COMPLAINTS AGAINST AIRCRAFT TYPE BY COMPARATIVE SIZE 2017	26
FIGURE 11	GATWICK SUMMER 2015 AND WINTER 2016/17 LAEQ 6.5 HR NIGHT CONTOURS AND SUPPORTING POPULATION/HOUSEHOLD COUNT	28
FIGURE 12	HISTORIC AND CURRENT NIGHT QUOTA AND AIR TRAFFIC MOVEMENT LIMITS FOR THE SUMMER AND WINTER	29
FIGURE 13	THE DFT'S NEW NIGHT FLIGHT REGIME LIMITS	30
FIGURE 14	24 HOUR PERIOD OF EASTERLY OPERATIONS (RUNWAY 08R) ILLUSTRATING ARRIVING AIRCRAFT (RED TRACKS) AND DEPARTING AIRCRAFT (GREEN TRACKS) ONLY	31
FIGURE 15	24 HOUR PERIOD OF EASTERLY OPERATIONS (RUNWAY 08R) SHOWING DEPARTURES ONLY – MAP 1 OF 2	31
FIGURE 16	24 HOUR PERIOD OF EASTERLY OPERATIONS (RUNWAY 08R) SHOWING DEPARTURES ONLY – MAP 2 OF 2	31
FIGURE 17	24 HOUR PERIOD OF EASTERLY OPERATIONS (RUNWAY 08R) SHOWING ARRIVALS ONLY - MAP 1 OF 2	32
FIGURE 18	24 HOUR PERIOD OF EASTERLY OPERATIONS (RUNWAY 08R) SHOWING ARRIVALS ONLY - MAP 2 OF 2	32
FIGURE 19	24 HOUR PERIOD OF WESTERLY OPERATIONS (RUNWAY 26L) ILLUSTRATING ARRIVING AIRCRAFT (RED TRACKS) AND DEPARTING AIRCRAFT (GREEN TRACKS) ONLY	33
FIGURE 20	24 HOUR PERIOD OF WESTERLY OPERATIONS (RUNWAY 26L) SHOWING DEPARTURES ONLY – MAP 1 OF 2	34
FIGURE 21	24 HOUR PERIOD OF WESTERLY OPERATIONS (RUNWAY 26L) SHOWING DEPARTURES ONLY – MAP 2 OF 2	34

TABLE OF FIGURES

00

FIGURE 22	24 HOUR PERIOD OF WESTERLY OPERATIONS (RUNWAY 26L) SHOWING ARRIVALS ONLY – MAP 1 OF 2	35
FIGURE 23	24 HOUR PERIOD OF WESTERLY OPERATIONS (RUNWAY 26L) SHOWING ARRIVALS ONLY – MAP 2 OF 2	35
FIGURE 24	MAP ILLUSTRATING THE LOCATION OF THE NOISE PREFERENTIAL ROUTES, THE ASSOCIATED STANDARD INSTRUMENT DEPARTURE ROUTE AND THE VECTORING ALTITUDE AT LONDON GATWICK	36
FIGURE 25	MAP ILLUSTRATING THE POSTCODE LOCATION OF AIRCRAFT NOISE COMPLAINTS RECEIVED FOR THE PERIOD 1 JANUARY 2017 TO 31 DECEMBER 2017 - MAP 1 OF 4	37
FIGURE 26	MAP ILLUSTRATING THE POSTCODE LOCATION OF AIRCRAFT NOISE COMPLAINTS RECEIVED FOR THE PERIOD 1 JANUARY 2017 TO 31 DECEMBER 2017 - MAP 2 OF 4	38
FIGURE 27	MAP ILLUSTRATING THE POSTCODE LOCATION OF AIRCRAFT NOISE COMPLAINTS RECEIVED FOR THE PERIOD 1 JANUARY 2017 TO 31 DECEMBER 2017 - MAP 3 OF 4	39
FIGURE 28	MAP ILLUSTRATING THE POSTCODE LOCATION OF AIRCRAFT NOISE COMPLAINTS RECEIVED FOR THE 1 JANUARY 2017 TO 31 DECEMBER 2017 - MAP 4 OF 4	40
FIGURE 29	MAP ILLUSTRATING THE BOUNDARY OF THE GATWICK AIRPORT NOISE INSULATION SCHEME	41
FIGURE 30	GATWICK AIRPORT LTD HOME OWNER SUPPORT SCHEME BOUNDARY	42
FIGURE 31	GATWICK AIRPORT LTD PROPERTY MARKET SUPPORT BOND SCHEME BOUNDARY	43
FIGURE 32	GATWICK SUMMER 2015/WINTER 2015-16 LAEQ 6.5HR NIGHT 55DBA CONTOUR	44
FIGURE 33	ESTIMATED CURRENT FINANCIAL COST TO GATWICK AIRPORT LTD OF NOISE MANAGEMENT	45
FIGURE 34	ESTIMATED TOTAL NUMBER OF PEOPLE AND DWELLINGS ABOVE VARIOUS NOISE LEVELS, LDEN	101
FIGURE 35	ESTIMATED TOTAL NUMBER OF PEOPLE AND DWELLINGS ABOVE VARIOUS NOISE LEVELS, LDAY	101
FIGURE 36	ESTIMATED TOTAL NUMBER OF PEOPLE AND DWELLINGS ABOVE VARIOUS NOISE LEVELS, LEVENING	102
FIGURE 37	ESTIMATED TOTAL NUMBER OF PEOPLE AND DWELLINGS ABOVE NOISE LEVELS, LAEQ, 16H	102
FIGURE 38	ESTIMATED TOTAL NUMBER OF PEOPLE AND DWELLINGS ABOVE VARIOUS NOISE LEVELS, LNIGHT	103
FIGURE 39	COMPARISON OF OLD AND NEW ACTION PLAN ACTIONS	107



GLOSSARY OF TERMS

01

AAL	Above Aerodrome Level
AMSL	Above Mean Sea Level
ACARE	Advisory Council for Aeronautical Research in Europe
ACOP	Arrivals Code of Practice
ACP	Airspace Change Proposal
AEF	Aviation Environment Federation
AIP	Aeronautical Information Publication
ANASE	Attitudes to Noise from Aviation Sources in England
ANEG	Airspace and Noise Engagement Group
ANMAC	Aircraft Noise Monitoring Advisory Committee. The committee is chaired by the Department for Transport and comprises, among others, representatives of the airlines, Heathrow, Gatwick and Stansted airports and airport consultative committees at these airports.
ANS	Air Navigation Solutions Ltd
AONB	Area of Outstanding Natural Beauty
APU	Auxiliary Power Unit. A power unit located on the aircraft.
APF	Aviation Policy Framework
ATC	Air Traffic Control
ATWP	Air Transport White Paper
BAA	BAA Ltd, the company which previously owned Gatwick, Stansted and Edinburgh airports. Now known as Heathrow Airport Holdings Ltd.
CAA	Civil Aviation Authority
CDO	Continuous Descent Operations
CNG	Community Noise Group (attends the Noise Management Board)
dB (A)	A unit of sound pressure level, adjusted in accordance with the A weighting scale, which takes into account the increased sensitivity of the human ear at some frequencies.
Decibel (dB)	The decibel (dB) is a logarithmic unit of measurement that expresses the magnitude of a physical quantity relative to a specified or implied reference level. Its logarithmic nature allows very large or very small ratios to be represented by a convenient number. Being a ratio, it is a dimensionless unit. Decibels are used for a wide variety of measurements including acoustics, and for audible sound A-weighted decibels (dB (A)) are commonly used.
DEFRA	Department for Environment Food and Rural Affairs (UK Government)
DfT	Department for Transport (UK Government)
ECAC	European Civil Aviation Conference
EHSOR	Environment, Health, Safety and Operational Resilience (committee)

01

ANNEX ONE

GLOSSARY OF TERMS

EMB	Executive Management Board (of Gatwick Airport)
END	Environmental Noise Directive
EPNdb	Effective Perceived Noise Decibels (EPNdB). It refers to the metric 'EPNL' (Effective Perceived Noise Level) which is used for noise certification and takes account of tones and duration.
ERCD	Environmental Research and Consultancy Department of the Civil Aviation Authority
FAS	Future Airspace Strategy
EHO	Environmental Health Officer
FEGP	Fixed Electrical Ground Power
FLOPSC	Flight Operations Performance & Safety Committee
FPT	Flight Performance Team (previously known as the Flight Evaluation Unit)
GAL	Gatwick Airport Limited, the owner and operator of London Gatwick Airport
GATCOM	Gatwick Airport Consultative Committee
GNC	Ground Noise Committee
GNMG	Gatwick Noise Monitoring Group
GPU	Ground Power Unit
ICAO	International Civil Aviation Organization
ILS	Instrument Landing System
LAMP	London Airspace Management Programme
LOAEL	Lowest Observable Adverse Effect Level
LP/LP	Low Power / Loew Drag
L_{A90}	A-weighted sound level exceeded for 90% of the time
$L_{Aeq,\ 16h}$	The A-weighted average sound level over the 16 hour period of 07:00 – 23:00
$L_{Aeq,T}$	The notional A-weighted equivalent continuous sound level which, if it occurred over the same time period, would give the same noise level as the actual varying sound level. The T denotes the time period over which the average is taken, for example LAeq,8h is the equivalent continuous noise level over an 8 hour period.
L_{day}	The A-weighted average sound level over the 12 hour day period of 07:00 - 19:00
L_{den}	The day, evening, night level, Lden is a logarithmic composite of the Lday, Levening, and Lnight levels but with 5 dB(A) being added to the Levening value and 10 dB(A) being added to the Lnight value.
L_{eq}	Equivalent sound level of aircraft noise in dB(A), often called equivalent continuous sound level. For conventional historical contours this is based on the daily average movements that take place in the 16 hour period (07:00 - 23:00 LT) during the 92 day period 16 June to 15 September inclusive.
$L_{evening}$	The A-weighted average sound level over the 4 hour evening period of 19:00 - 23:00

GLOSSARY OF TERMS

01

L_{night}	The A-weighted average sound level over the 8 hour night period of 2300 – 0700
MCR	Managing Corporate Responsibility (committee)
NADP	Noise Abatement Departure Procedure
NAP	Noise Action Plan
NATMAG	Noise and Track Monitoring Advisory Group
NATS	Formerly known as National Air Traffic Services Ltd. NATS is licensed to provide en-route air traffic control for the UK and the Eastern part of the North Atlantic, and also provides air traffic control services under contract at several major UK airports.
Noise Contour	Map contour line indicating noise exposure in dB for the area that it encloses
NM	Nautical mile
NMB	Noise Management Board
NOAEL	No Observable Adverse Effect Level
NPR	Noise Preferential Route
NPS	National Policy Statement
NTK	Noise and Track Keeping monitoring system. The system associates radar data from air traffic control radar with related data from noise monitors at prescribed positions on the ground.
PNdB	Perceived Noise Level, measured in PNdB. Its measurement involves analyses of the frequency spectra of noise events as well as the maximum level.
QC	Quota Count - the basis of the London airports Night Restrictions regime.
QNH	Barometric altimeter setting which will cause the altimeter to read altitude above mean sea level.
SA	Sustainable Aviation - a UK aviation industry initiative aiming to set out a long term strategy for the industry to address it sustainability issues.
SOAEL	Significant Observed Adverse Effect Level - this is the level above which significant adverse effects on health and quality of life occur.
S.106	Section 106 (S106) Agreements are legal agreements between Local Authorities and developers; these are linked to planning permissions and can also be known as planning obligations.
WHO	World Health Organisation



EXTRACT FROM THE GUIDANCE FOR AIRPORT OPERATORS BY DEFRA

WHAT NEEDS TO BE INCLUDED IN AN ACTION PLAN?

An Action Plan must be drawn up for places near the airport which are affected by noise from airport operations as shown by the results of the noise mapping and meet a number of requirements set out in the Regulations:

- a description of the airport and any other noise sources taken into account;
- the authority responsible;
- legal context;
- any limit values in place;
- a summary of the results of the noise mapping, including an evaluation of the estimated number of people exposed to noise;
- identification of problems and situations that need to be improved;
- a record of the public consultations that have taken place;
- any noise reduction measures already in force and any projects in preparation;
- long term strategy;
- actions which the airport operator intends to take in the next five years, including measures to preserve quiet areas;
- financial information (if available): budgets, cost-effectiveness assessment, cost-benefit assessment;
- provisions envisaged for evaluating the implementation and the results of the Action Plan; and
- estimates in terms of the reduction of the number of people affected (annoyed, sleep-disturbed, or other).

REVISING AN EXISTING ACTION PLAN

The current plan should be reviewed and revised to include, as necessary:

- updated details about the airport and its operation;
- the results of the noise mapping completed in 2017;
- the progress made against the actions described in the current Action Plan;
- updated information about relevant legislation and standards;
- updated relevant national and local policies;
- information about on-going actions; and
- information about any proposed new actions.

It is envisaged that once the plan has been revised it will be presented to the Airport's Consultative Committee for comment, and any other appropriate bodies depending on the extent and nature of the revisions. The Airport Operator should summarise the comments received in the revised plan together with their response to the issues raised.

SUBMITTING AN ACTION PLAN FOR FORMAL ADOPTION

Once the plan has been updated and finalised, the Regulations require that it be sent to the Secretary of State for DEFRA for formal "adoption". This document can be sent to DEFRA via the noise@DEFRA.gsi.gov.uk email address and must include prominently displayed wording identifying it as a draft subject to formal adoption and approval.

The Secretary of State for DEFRA, in liaison with the Department for Transport, will form a view regarding whether or not the submitted revised plan meets the requirements of the Regulations and, therefore, whether or not the plan is appropriate for adoption.

- If the Secretary of State for DEFRA considers that the

ANNEX TWO

EXTRACT FROM THE GUIDANCE FOR AIRPORT OPERATORS BY DEFRA

requirements set out in the Regulations are met, they will notify the airport accordingly that the Action Plan has been adopted. The Action Plan should then be published by the Airport Operator as a public document in an electronic format within 28 days.

- If the requirements set out in the Regulations are not met, the airport operator will be required to make the necessary changes to the plan. Following revision, the revised plan will need to be resubmitted to the Secretary of State for DEFRA by an agreed date for further consideration.

ONGOING REQUIREMENT TO REVIEW NOISE ACTION PLANS

The Regulations contain a continuing obligation on Airport Operators to review (and revise, if necessary) the Noise Action Plan every 5 years or sooner where a major development occurs.

Airport Operators may wish to agree to carry out an informal review of the progress being made on the implementation of the Action Plan as part of their continuing engagement with the local airport consultative committee or other stakeholders. The process and timing for any informal review should be jointly agreed between the Airport Operator and the committee, or other stakeholders, as appropriate. Such reviews could form part of any regular environmental reporting that is already undertaken.

It should be noted that the Regulations give the Secretary of State the power to take action should they believe that a requirement of these Regulations is not being met due to any act or omission by the Airport Operator.

UPDATE FROM DEFRA AND DFT

On 9 February 2018, Gatwick Airport Ltd received an update from DEFRA and the DfT in light of queries raised of those departments and also changes to Government's aviation noise policy.

The following is extracted from the update from DEFRA and DfT:

The purpose of this is to highlight these changes [to the Government's aviation noise policy] and draw your attention to some other points that have been raised in discussion and should be taken into account in preparing Action Plans.

On 24 October 2017, the Department for Transport published its Consultation Response on UK Airspace Policy: A framework for balanced decisions on the design and use of airspace. You should consider how these changes to government policy need to be reflected in your Noise Action Plans.

Key changes in the policy to consider are:

- The creation of an Independent Commission on Civil Aviation Noise (ICCAN) – This body will be established this spring to help ensure that the noise impacts of airspace changes are properly considered and give communities a greater stake in noise management. ICCAN may issue best practice guidance in relation to noise management, and you should consider the process through which this will be taken into account in your Action Plan.
- Important changes to aviation noise compensation policy, to improve fairness and transparency. Airspace changes have been incorporated into the existing compensation policy so that compensation policy is the same for all changes which affect noise impacts, regardless of whether they are a result of infrastructure change or airspace change.
- A new requirement for options analysis in airspace change, to enable communities to engage with a transparent airspace change process and ensure options such as multiple routes are considered. The Civil Aviation Authority's airspace change process has been revised to take account of this change.

EXTRACT FROM THE GUIDANCE FOR AIRPORT OPERATORS BY DEFRA

- New metrics and appraisal guidance to assess noise impacts and their impacts on health and quality of life. In particular this will ensure noise impacts are considered much further away from airports than at present. These adverse effects should be assessed using a risk-based approach above the lowest-observed adverse-effect level (LOAEL), using the DfT's transport appraisal guidance WebTAG. Supplementing this risk-based approach with frequency-based noise metrics will ensure that aircraft noise and its impacts can be accurately factored into decisions.

Over the past six months DEFRA has also held a number of discussions about the action planning process with individual airport operators and community groups. In the light of issues raised in those discussions, DEFRA would like to draw to your attention that, when reviewing the Plans submitted for adoption, the Government will pay particular attention to the following aspects set out in the previously circulated guidance:

- "A record of the public consultations that have taken place" (page 11). Some airports have already been in touch with DEFRA to highlight other engagement work that is taking place in parallel to their Noise Action Plan consultations. It is important that the Action Plan process does not contribute to an "overload" in community engagement, and that the consultation is sufficiently long for interested parties to formulate their responses, taking account of other consultations which may be taking place over the same time period and placing a burden on consultees' resources. It is also important that the issues raised by consultees are demonstrably given thorough consideration by airport operators. We shall be looking for evidence of how you have ensured this is the case in your submitted Plans.
- "Estimates in terms of the reduction of the number of people affected (annoyed, sleep disturbed, or other)… as a result of [the measures in] this Action Plan" (p13). Your plans should include evidence that the measures are challenging, objective, quantified (where reasonably practicable), subject to specific timescales, and have taken full account of the views of local communities.
- Where noise reduction measures need the support and active participation of other parties (such as NATS & CAA), please include information on how the airport intends to achieve such co-operation.

03

ANNEX THREE

STRATEGIC NOISE MAPS 2016

Figure 1: DEFRA Strategic noise maps, L_{den} 2016

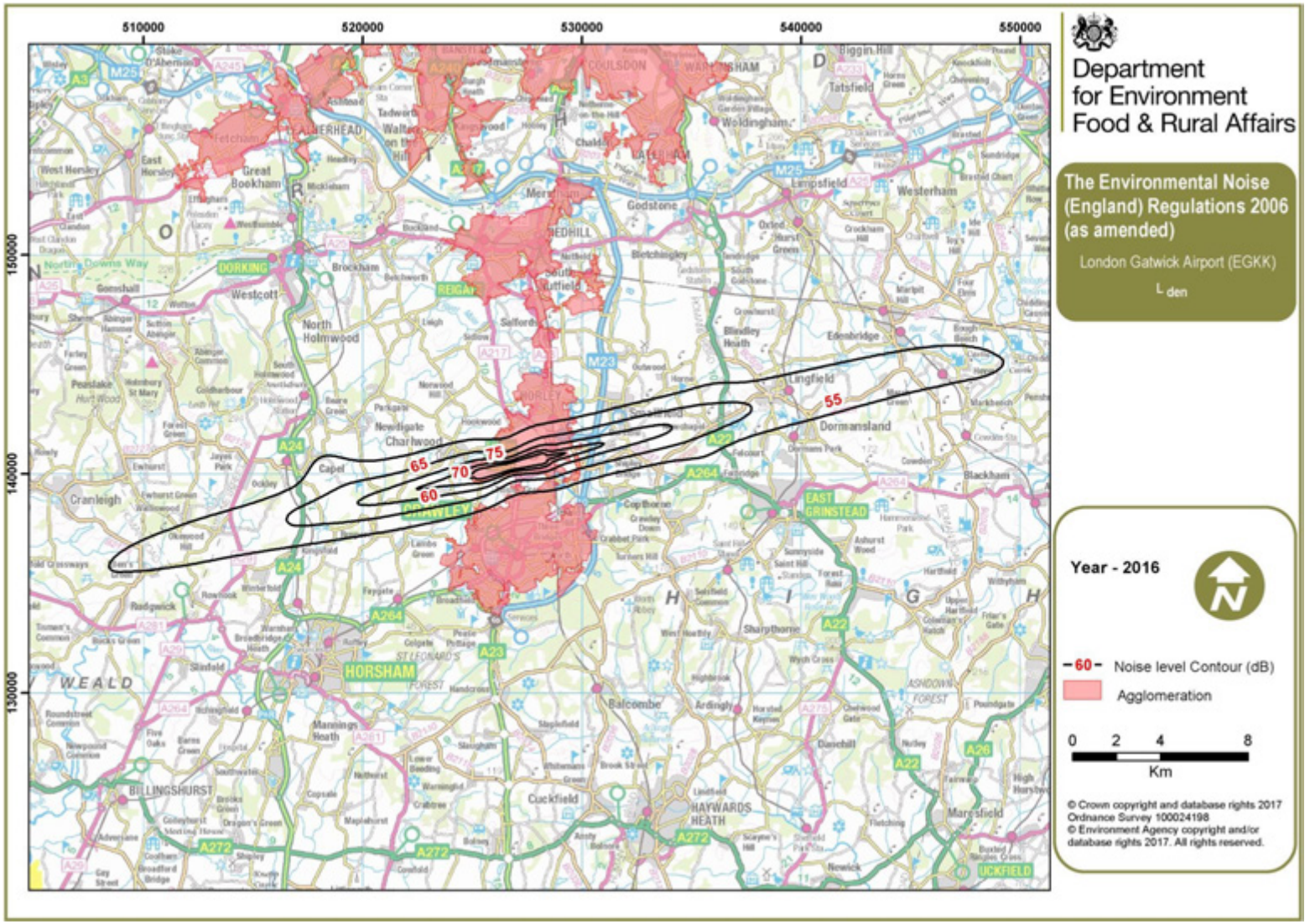
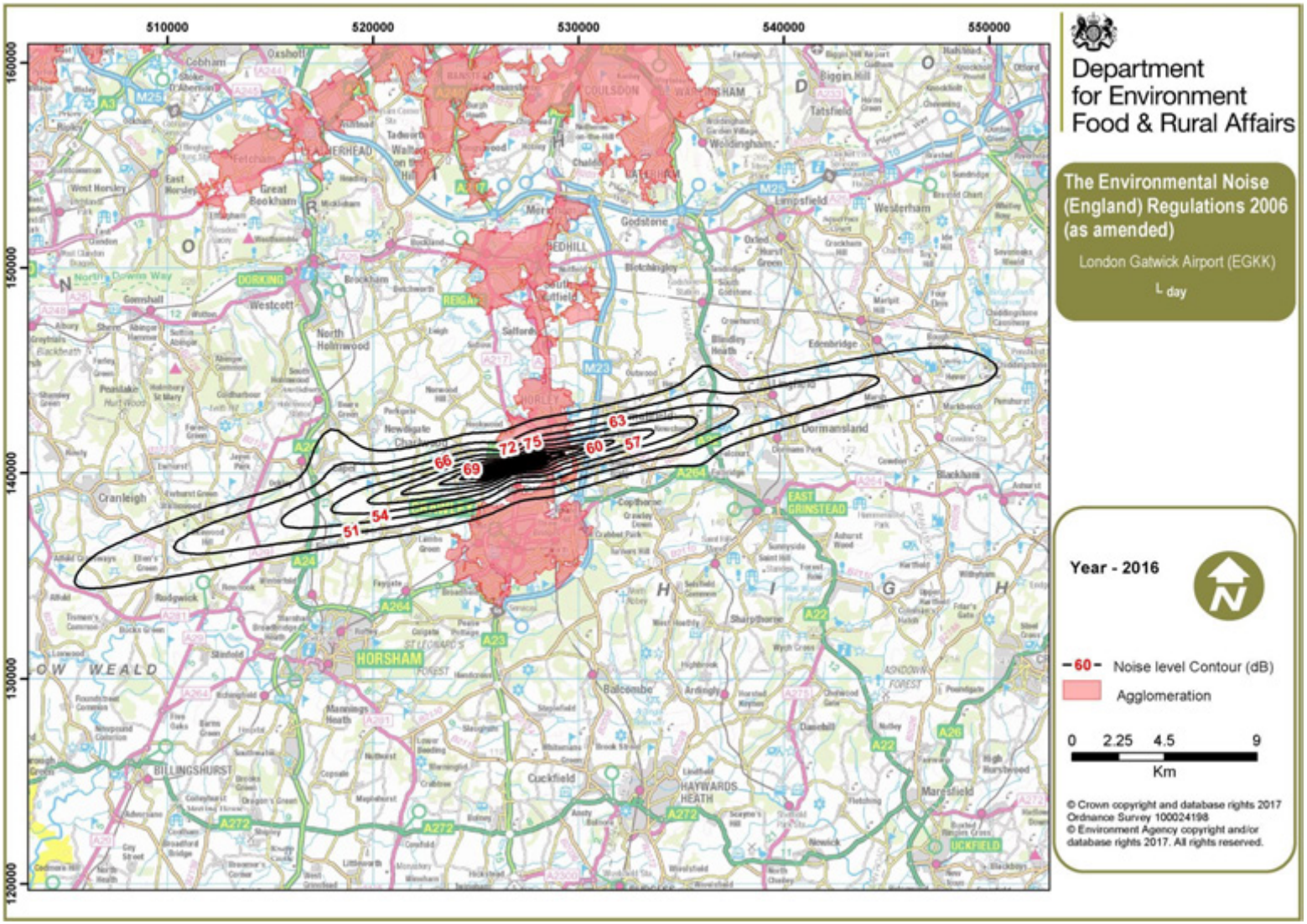


Figure 2: DEFRA Strategic noise maps, L_{day} 2016



ANNEX THREE

STRATEGIC NOISE MAPS 2016

Figure 3: DEFRA Strategic noise maps, $L_{evening}$ 2016

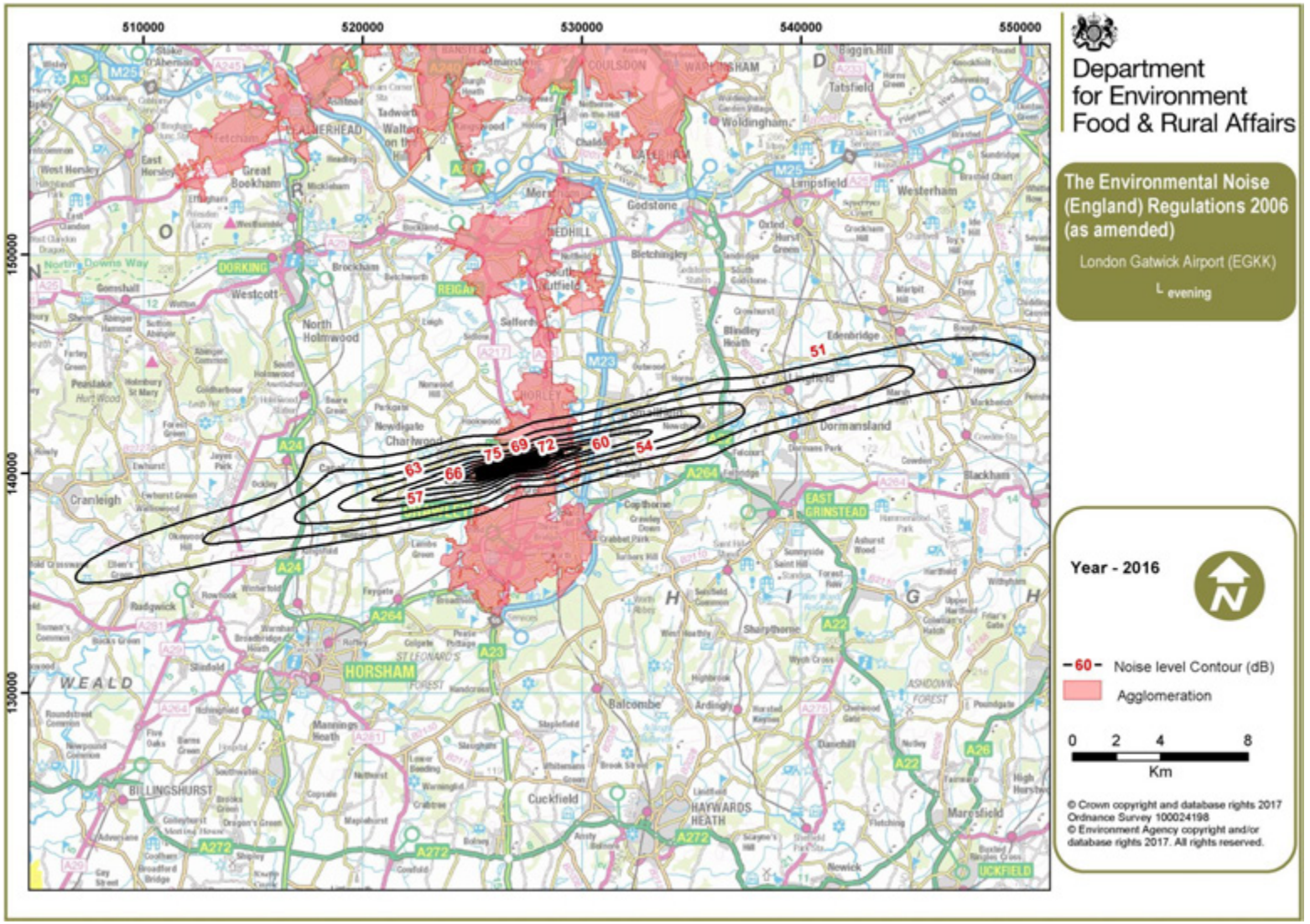
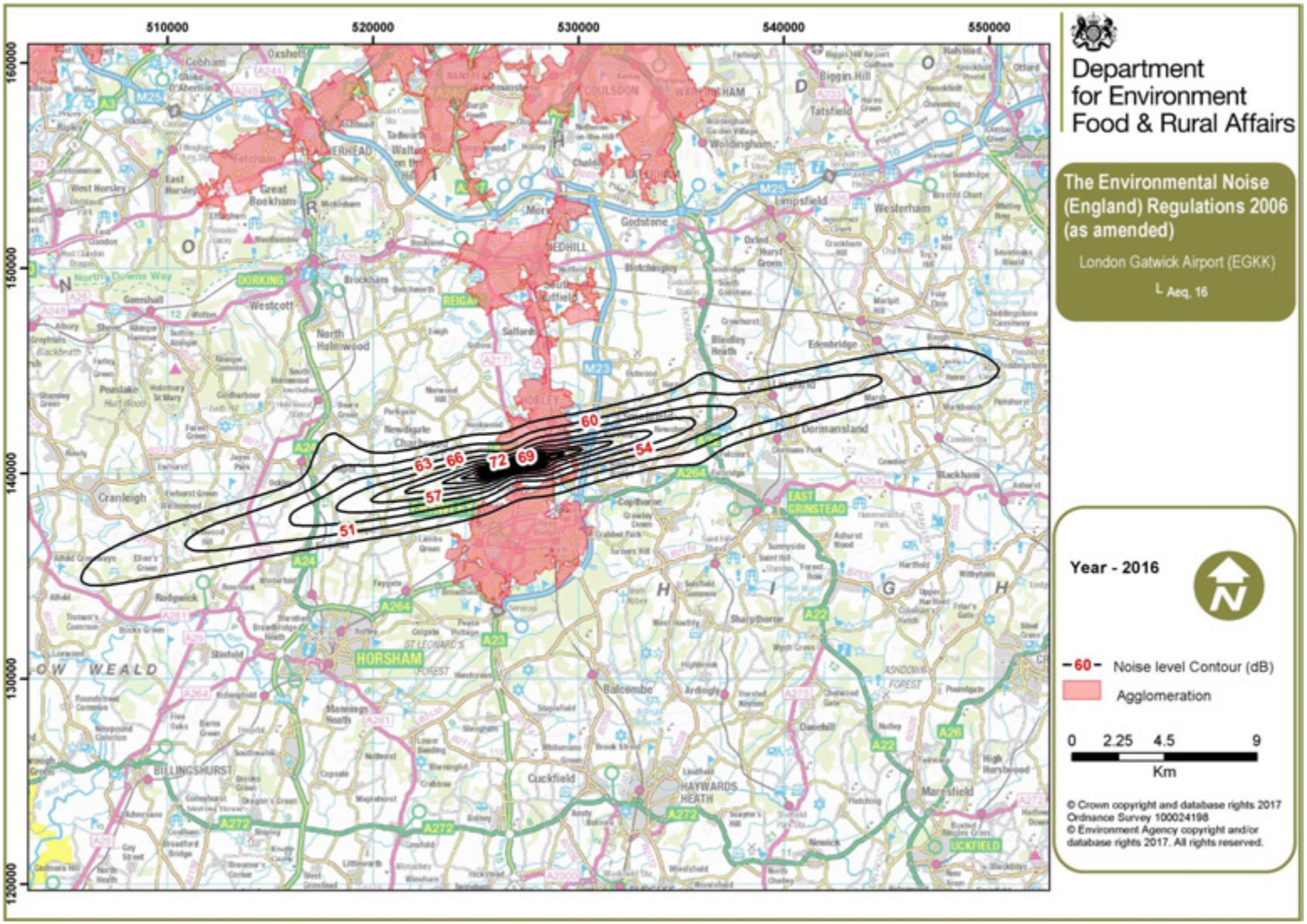


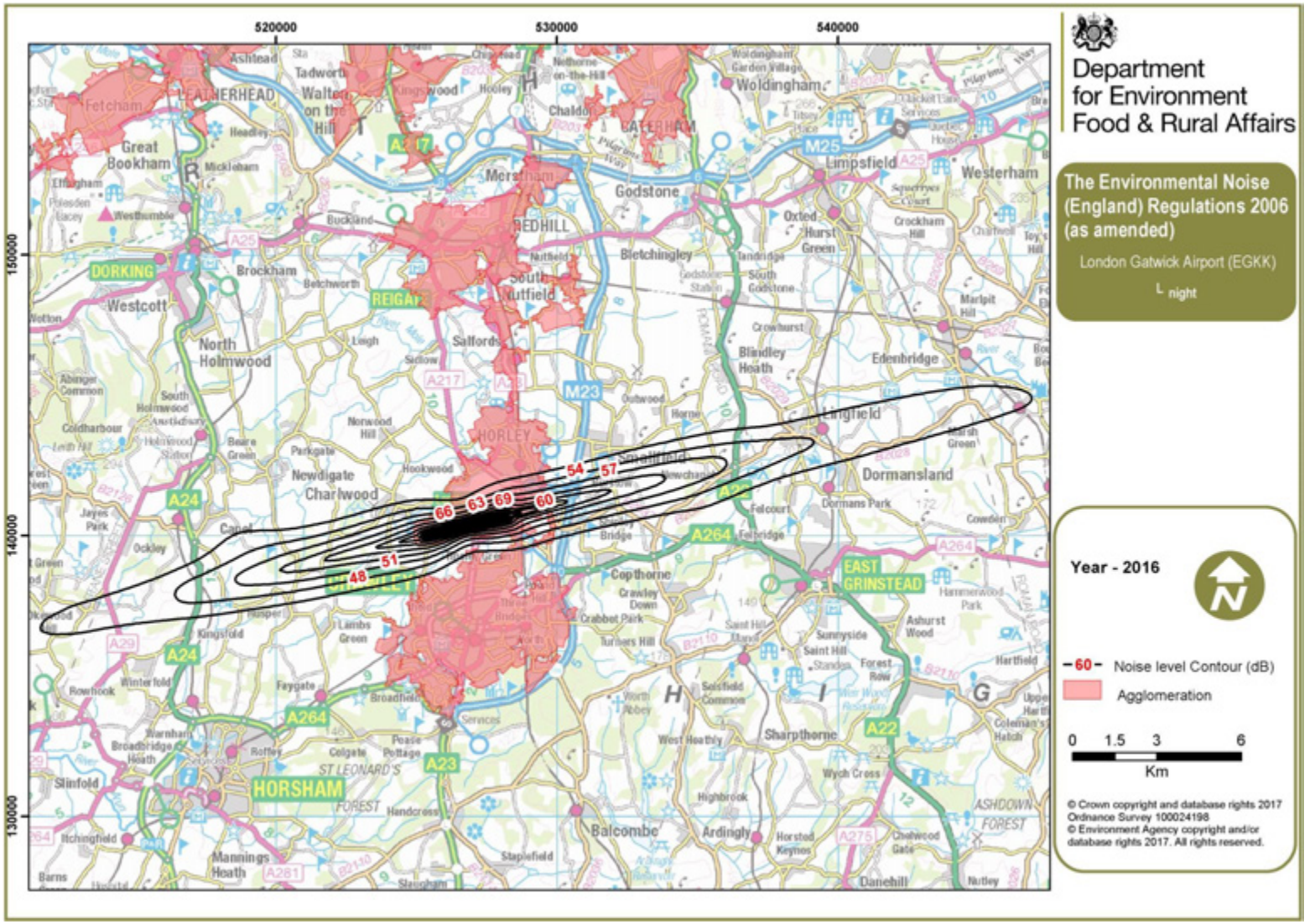
Figure 4: DEFRA Strategic noise maps, $L_{Aeq\ 16}$ 2016


510000
520000
530000
540000
550000
160000
150000
140000
130000
120000
Department for Environment Food & Rural Affairs
The Environmental Noise (England) Regulations 2006 (as amended)
London Gatwick Airport (EGKK)
L Aeq, 16
Year - 2016
60
63
66
72
69
54
57
51
Noise level Contour (dB)
Agglomeration
0 2.25 4.5 9
Km
© Crown copyright and database rights 2017 Ordnance Survey 100024198
© Environment Agency copyright and/or database rights 2017. All rights reserved.
HORSHAM
EAST GRINSTEAD
DORKING
REIGATE
BILLINGSHURST
HAYWARDS HEATH
UCKFIELD
Cranleigh
Dormansland
Balcombe
Cuckfield
Godstone
Oxted
Lingfield
Westerham
Edenbridge
Biggin Hill
Tatsfield
Woldingham
Caterham
Warlingham
Coulsdon
Purley
Redhill
Reigate
Banstead
Epsom
Ashtead
Leatherhead
Oxshott
Cobham
Esher
Walton on the Hill
Tadworth
Great Bookham
Effingham
Horsley
Gomshall
Shere
Abinger Hammer
Westcott
Brockham
North Holmwood
Newdigate
Capel
Rusper
Ifield
Crawley
Crawley Down
Copthorne
Felbridge
Hever
Blackham
Hartfield
Withyham
Forest Row
Ashurst Wood
Wych Cross
Ardingly
Slaugham
Handcross
Pease Pottage
Warninglid
Slinfold
Rudgwick
Bucks Green
Billingshurst
Broadbridge Heath
Horsham
Rusper
Ifield
Crawley
Three Bridges
Pound Hill
Worth
Maidenbower
Furnace Green
Copthorne
Crawley Down

ANNEX THREE

STRATEGIC NOISE MAPS 2016

Figure 5: DEFRA Strategic noise maps, L_{night} 2016




26L

04 | ANNEX FOUR
STATISTICAL INFORMATION

Figure 6: Statistical information in support of the Noise Action Plan

NOISE MITIGATION MEASURES	2010	2011	2012	2013	2014	2015	2016	2017
Aircraft runway movements	240,462	251,019	246,792	250,527	259,974	267,777	280,089	286,271
West/east runway split	64/36	67/33	71/29	63/37	67/33	70/30	67/33	78/22
Standby runway movements	1,012	2,444	14,836	4,473	1,496	2,498	2,567	3,722
Track keeping performance	96.98%	97.42%	97.63%	98.04%	99.28%	99.71%	98.56%*	98.06%
24 hour CDO performance	89.73%	90.49%	88.56%	91.37%	92.61%	89.75%	88.58%**	90.48%
Day/shoulder CDO performance	89.31%	90.38%	88.72%	91.13%	92.43%	89.21%	88.18%**	90.56%
Core night CDO performance	93.94%	93.96%	85.27%	94.04%	95.25%	95.32%	92.90%**	89.60%
1,000ft infringements	6	3	2	0	0	0	0	0
Departure day noise infringements	0	0	0	0	0	0	0	0
Departure night & shoulder noise infringements	0	4	0	0	0	0	1	2
% Night arrivals joining below 3,000ft (2,598ft)	0.15%	0.13%	0.65%	0.46%	0.16%	0.14%	0.21%	0.14%
% Night arrivals joining below 3,000ft (2,798ft)	6.35%	7.41%	16.12%	4.61%	3.08%	2.42%	2.57%	2.60%
Total night arrivals joining at less than 10nm	3.04%	2.86%	5.87%	2.17%	2.46%	1.91%	4.25%	7.39%
% of arrivals performing go-arounds	0.30%	0.31%	0.42%	0.38%	0.39%	0.39%	0.46%	0.43%

NOISE MITIGATION MEASURES	2010	2011	2012	2013	2014	2015	2016	2017
Night jet movements used (Summer)	9,875	9,859	9,837	10,003	11,147	11,149	11,303	11,070
Night jet movements used (Winter)	2,251	1,473	1,656	1,510	1,756	1,872	2,022	1,939
Night jet quota count used (Summer)	4,824	4,998.5	4,993.5	4,821.5	4,943.75	4,765.5	4,912.75	4,527.75
Night jet quota count used (Winter)	1,280.75	920.25	1,044	828.5	852.75	953	1,198.25	1,052.25
Dispensations granted	257	0	0	22	155	435	648	495
Use of 26 WIZAD during night period	1	1	0	0	0	4	0	0
Percentage of Chapter 4 aircraft	98%	96%	99%	99%	99%	99%	99%	99%
57Leq day noise contour area (km²) (actual)	39.6	40.4	41.2	40.9	42.2	42.8	44.2	42.7
57Leq day noise contour population affected (actual)	2,850	3,050	3,650	3,250	3,300	3,650	4,150	4,050
57Leq day noise contour households affected (actual)	1,250	1,350	1,600	1,350	1,350	1,450	1,700	1,650

* Track Keeping performance monitoring changed on 26th May 2016 to include all SIDs.
** The point at which CDO performance measurement commenced changed on the 1st August 2016 from 6,000ft to 7,000ft.

05 | ANNEX FIVE
COMPLAINT DATA



Airports bring positive economic and social benefits as well as environmental impacts. They are important to the economy, providing jobs, encouraging inward investment, and boosting local tourism. However, they can also have an impact for those communities that exist around airports. Noise remains a significant issue for people living or working close to airports or under flight paths. Complaint statistics can be extremely difficult to interpret as a large proportion of all our complaints originate from a very small group of individuals.

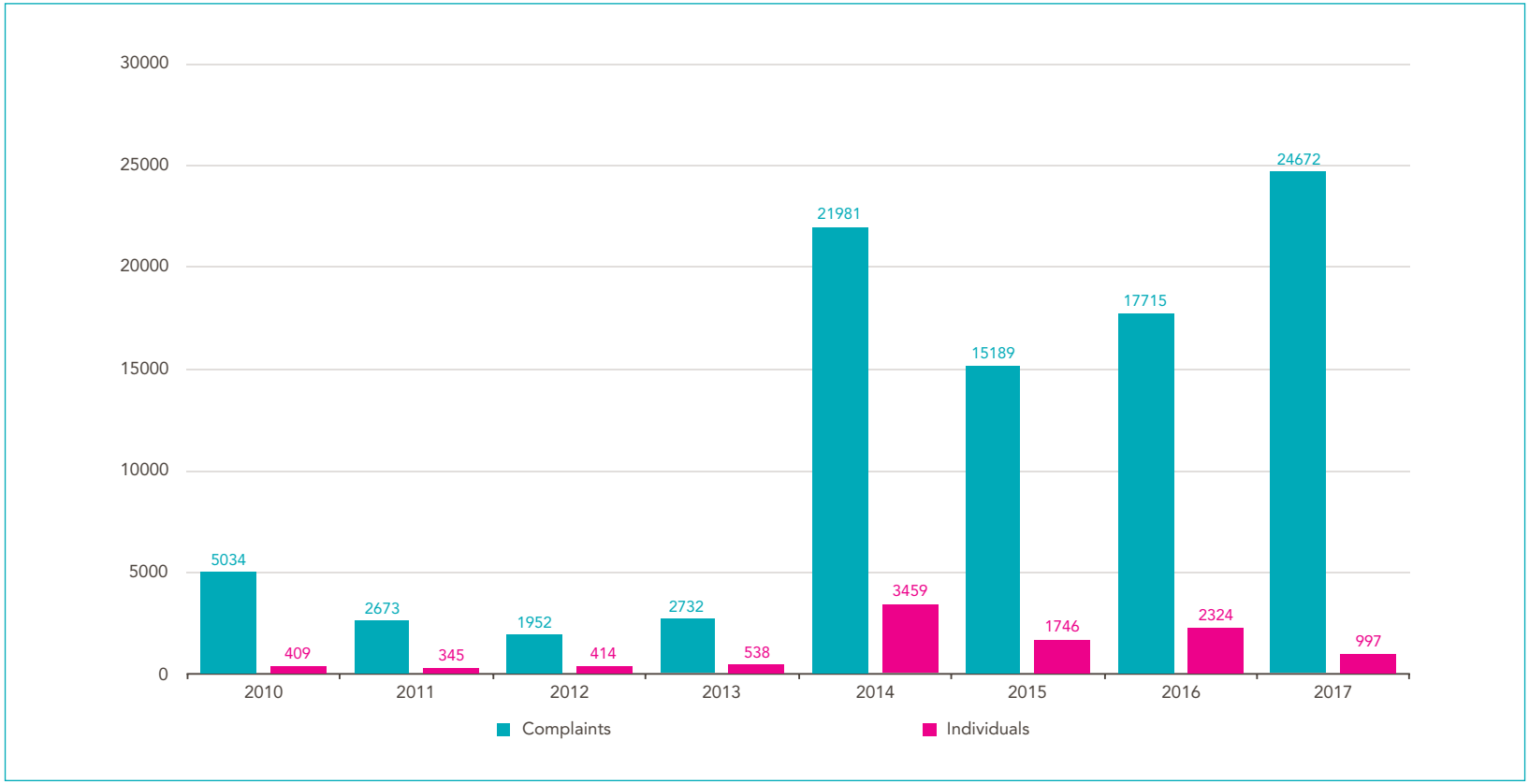
The last UK study on aviation noise Attitudes to Noise from Aviation Sources in England (ANASE) concluded that:

> *"There is common agreement that people today have higher expectations of a peaceful living environment, are less tolerant of environmental intrusion, and might consequently be less accepting of aircraft noise. This view is supported by social trend data. While both income and taste effects are likely to be important, it is not possible to identify their relative strength from [the ANANSE] research: they are, of course, closely correlated."*

All aircraft noise complaints and enquiries are handled by the Flight Performance Team at Gatwick Airport. This team is responsible for recording, investigating and where applicable responding to aircraft noise complaints and to do so, a specialised complaint handling system is used, combining a database, mapping system and flight and noise records from the Airport Noise and Track Keeping system.

Figure 7 below shows the number of individual callers compared to the number of complaints made between 2010 and 2017. This illustrates one of the difficulties in studying the effects of noise, as people's tolerance of noise and their perception of what causes annoyance varies widely. It is highly subjective and differs not only between neighbours, but also between socio-economic groups.

Figure 7: The Number of Individual Complainants and Recorded Complaint Numbers in 2017



ANNEX FIVE

COMPLAINT DATA

Figure 8: The Top 20 Locations for Complaints In 2017

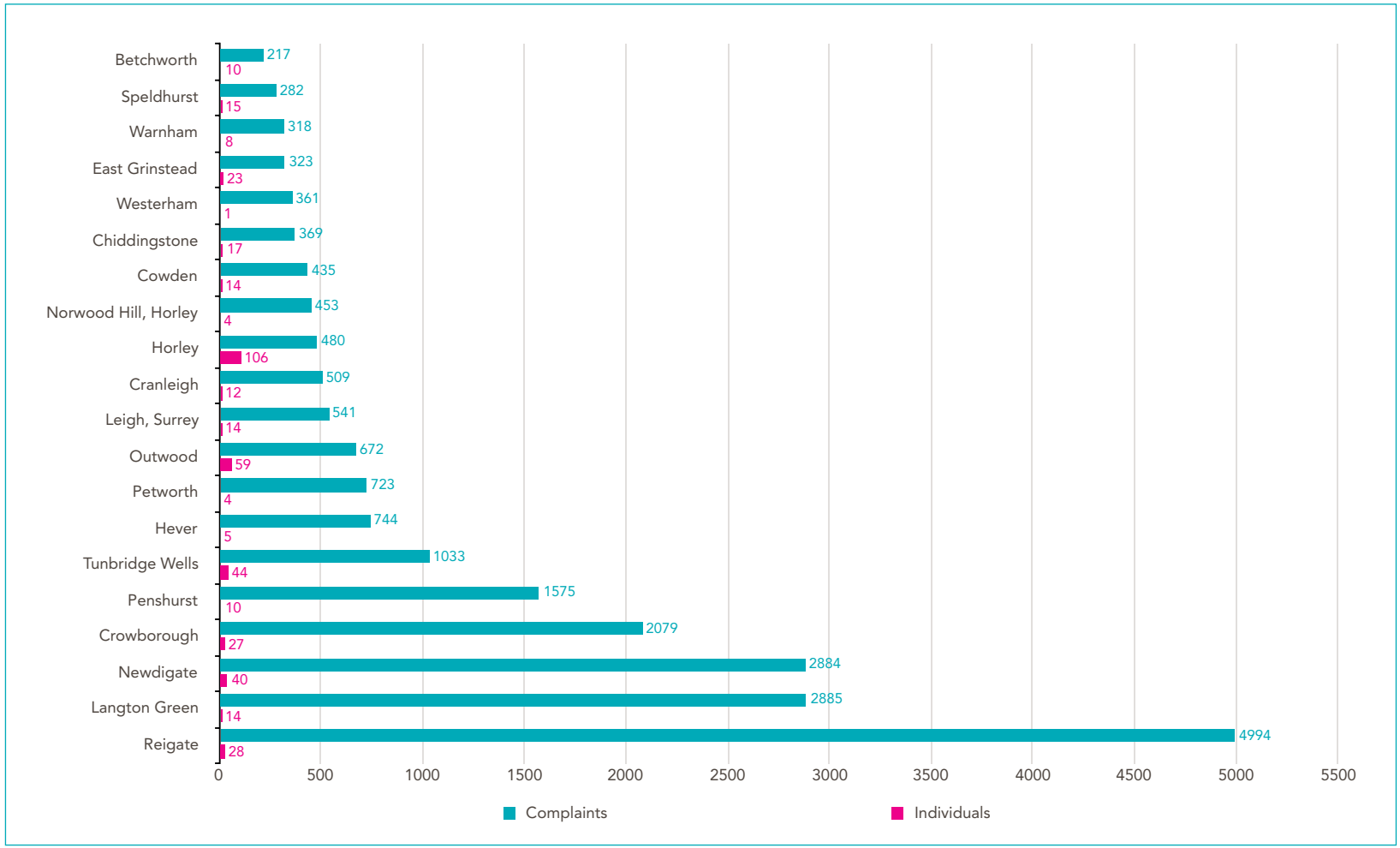


Figure 9: The Analysis of the Distribution of Complaints against Aircraft Types Compared to Total Movements 2017

Our Noise and Track Keeping System has the ability to can also automatically assign a specific aircraft noise complaint with a Gatwick Airport related air traffic movement and therefore enables the airport to provide statistics on the various stages of flight that are the cause for complaint.

The system also categorises the aircraft types that result in the majority of aircraft noise complaints as illustrated in the figure overleaf.

Study of these figures would suggest that aircraft noise is not always the primary issue as it appears it is the frequency of the aircraft that provokes more complaints. The most common aircraft types operating at Gatwick receive the most complaints.

Figure 10 overleaf shows aircraft types classified by their comparable size and the percentage of complaints received per movement.

TYPE	TOTAL NUMBER OF MOVEMENTS	TOTAL COMPLAINTS	% OF MOVEMENTS PER TYPE	% COMPLAINTS PER TYPE
Airbus A320	94,363	2,876	33.00%	24.70%
Airbus A319	87,821	2,686	30.71%	23.07%
Boeing 737	47,074	1,995	16.46%	17.13%
Airbus A380	2,094	801	0.73%	6.88%
Boeing 747	3,159	632	1.10%	5.43%
Airbus A321	13,650	570	4.77%	4.89%
Boeing 777	8,232	563	2.88%	4.83%
Airbus A330	3,907	414	1.37%	3.56%
Boeing 757	6,433	190	2.25%	1.63%
Other Light Aircraft	241	175	0.08%	1.50%
Boeing 787	6,738	155	2.36%	1.33%
Boeing 767	2,170	152	0.76%	1.31%
Embraer	6,308	139	2.21%	1.19%
Helicopter	38	130	0.01%	1.12%
Airbus A310	440	44	0.15%	0.38%
Cessna Citation	168	42	0.06%	0.36%
ATR	1,362	20	0.48%	0.17%
Airbus A340	16	11	0.01%	0.09%
McDonnel Douglas	82	10	0.03%	0.09%
Airbus A350	618	9	0.22%	0.08%
Lockheed	6	9	0.00%	0.08%
Beechcraft Jet	16	8	0.01%	0.07%
Gulfstream	108	5	0.04%	0.04%
Dash 8 Prop	8	3	0.00%	0.03%
Airbus A318	15	2	0.01%	0.02%
Dassault Falcon	70	2	0.02%	0.02%
Canadair Regional Jet	28	1	0.01%	0.01%
Bombardier	766	1	0.27%	0.01%
Fokker 100	26	0	0.01%	0.00%

05 ANNEX FIVE
COMPLAINT DATA

Figure 10: The Analysis of Complaints against Aircraft Type by Comparative Size 2017

CLASS	TYPE	TOTAL NUMBER OF MOVEMENTS	TOTAL COMPLAINTS	% OF COMPLAINTS PER CLASS	% OF MOVEMENTS PER CLASS
Medium	Airbus A320	94,363	2,876	25.15%	33.07%
Medium	Airbus A319	87,821	2,686	23.49%	30.78%
Medium	Boeing 737	47,074	1,995	17.44%	16.50%
Large	Airbus A380	2,094	801	7.00%	0.73%
Large	Boeing 747	3,159	632	5.53%	1.11%
Medium	Airbus A321	13,650	570	4.98%	4.78%
Large	Boeing 777	8,232	563	4.92%	2.88%
Large	Airbus A330	3,907	414	3.62%	1.37%
Medium	Boeing 757	6,433	190	1.66%	2.25%
Small	Other light aircraft	241	175	1.53%	0.08%
Large	Boeing 787	6,738	155	1.36%	2.36%
Large	Boeing 767	2,170	152	1.33%	0.76%
Small	Embraer	6,308	139	1.22%	2.21%
Small	Cessna Citation	168	42	0.37%	0.06%
Small	ATR	1,362	20	0.17%	0.48%
Small	McDonnell Douglas	82	10	0.09%	0.03%
Large	Airbus A350	618	9	0.08%	0.22%
Small	Gulfstream	108	5	0.04%	0.04%
Small	Dassault Falcon	70	2	0.02%	0.02%
Medium	Bombardier	766	1	0.01%	0.27%

This figure also confirms that there are more complaints for the more common aircraft types at Gatwick Airport rather than related to the size of the aircraft. The aircraft with the greatest numbers of movements are classed as medium sized aircraft and these appear to have the greatest number of complaints.

We should point out that helicopters are also a source of complaint, however very few operate from Gatwick, and the majority of our complaints on this subject relate to either police/air ambulance flights from Redhill Aerodrome or military flights.

Gatwick Airport remains dedicated to reducing the noise impact of its operations on local communities. In line with current Government guidance, we are actively looking at new innovative ways of reducing the number of people impacted by Gatwick traffic.

To this end, we will continue to work with our airlines, Air Traffic Control and local community representatives to continue to improve the noise environment in and around the airport.

Complaint location maps are included in Annex 7 – General Maps.



06

ANNEX SIX

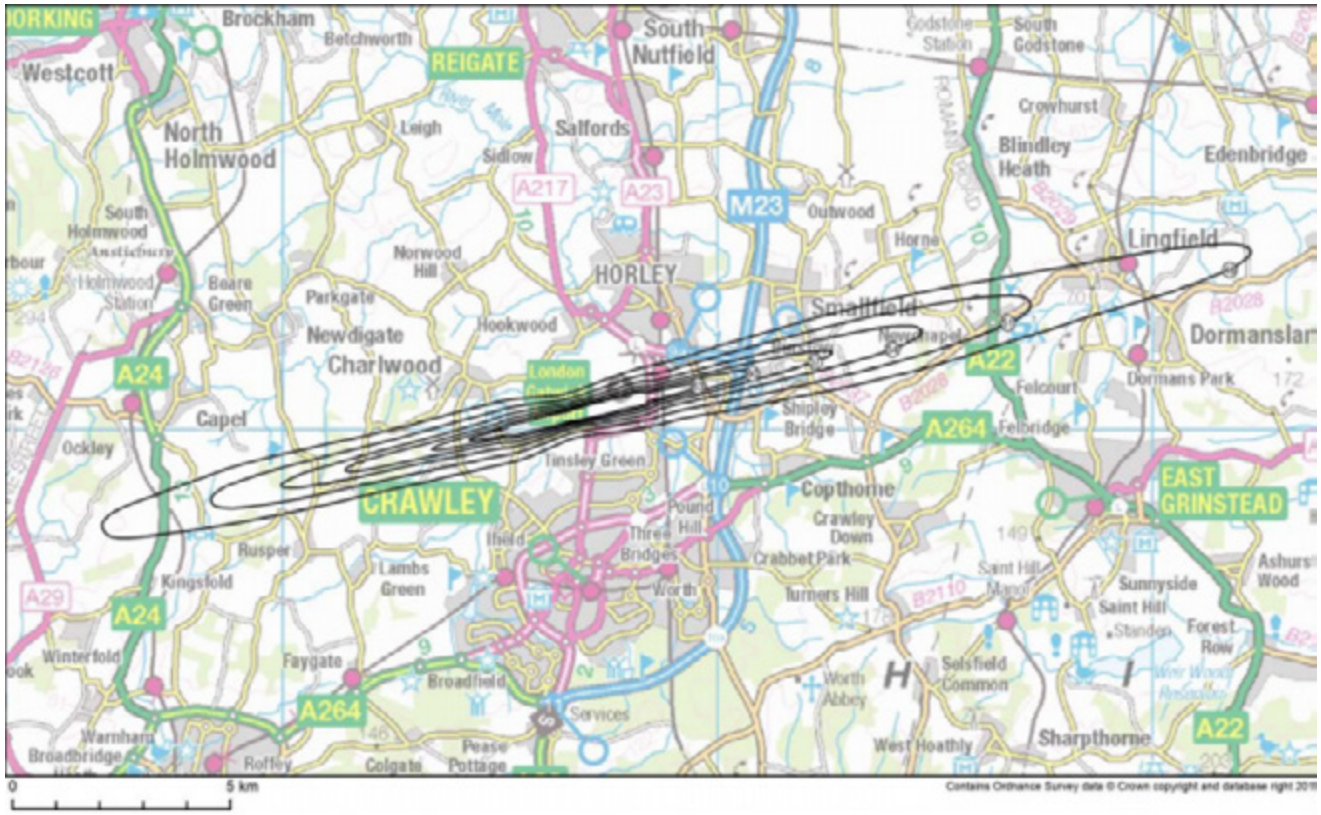
SUMMARY OF LIMIT VALUES IN PLACE

LOCAL AUTHORITY PLANNING CONDITIONS

Limit the 6.5 hour, 48 dB(A) L_{eq} contour (for the winter and summer seasons combined) to 47km² by 2011/2012. At Gatwick in 2011/2012 the 6.5 hour 48dBA L_{eq} contour (for the winter and summer seasons combined) was 34.1 km². In 2002-2003 it was 41.3 km².

The contours below have been calculated using data recorded between March 2015 and March 2016 (a full summer and winter season as described in the current night restrictions regime). The areas, population and household data are also provided for each contour level, on a cumulative basis, in accordance with normal practice. Night Movement and Quota Count Restrictions between 23:00 and 06:00 local.

Figure 11: Gatwick Summer 2015 and Winter 2016/17 $L_{Aeq\ 6.5\ hr}$ night contours and supporting population/household count.



SUMMARY OF LIMIT VALUES IN PLACE

	Gatwick 2015-16 $L_{Aeq\ 6.5hr}$ night (actual usage)		
CONTOUR (dBA)	AREA (sq km)	POPULATION (1000s)	HOUSEHOLDS (1000s)
48	35.2	4.3	1.6
51	18.0	1.3	0.5
54	9.0	0.5	0.1
57	4.6	0.3	0.1
60	2.3	0.1	<0.1
63	1.2	0.0	0.0

NIGHT QUOTA COUNT AND AIR TRAFFIC MOVEMENTS LIMITS

Figure 12: Historic and current Night Quota and air traffic movement limits for the summer and winter

WINTER	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Movements limits	3,250	3,250	3,250	3,250	3,250	3,250	3,250	3,250
Quota points	2,060	2,000	2,000	2,000	2,000	2,000	2,000	2,000

SUMMER	2010	2011	2012	2013	2014	2015	2016	2017
Movements limits	11,200	11,200	11,200	11,200	11,200	11,200	11,200	11,200
Quota points	6,400	6,300	6,200	6,200	6,200	6,200	6,200	6,200

The Night flying restrictions[1] at Gatwick Airport are set by the Department for Transport, with the current restrictions due to expire in October 2017. The Government published its decision on the next night flights regime for Gatwick in July 2017 and this will be in place for the period October 2017 to October 2022.

[1] Department for Transport Night Flight Restrictions at the time the 2019-2024 Noise Action Plan was revised

06

ANNEX SIX

SUMMARY OF LIMIT VALUES IN PLACE

The movements limit remains unchanged however the night quota limit will be reduced. This is summarised in the table below:

Figure 13: The DfT's new night flight regime limits

WINTER	2017/18	2018/19 TO 2021/2022
Movements limits	3,250	3,250
Quota points	2,000	1,785

SUMMER	2018	2022
Movements limits	11,200	11,200
Quota points	6,200	5,150

In addition, a new quota count of 0.125 has been introduced for aircraft with an EPNdB of between 81 and 83.9. The combination of the new limits and this new QC category will further incentivise the use of quieter aircraft by encouraging industry to plan its operations with sufficient headroom to ensure the limits can still be complied with in the event of unplanned disruption or changes to their schedules.

DEPARTURE NOISE LIMITS FROM THE UK AIP

The noise abatement procedures contained within the UK AIP (see Section 7):

- Daytime (07:00-23:00) departure noise limit of 94dB(A) L_{max} at 6.5km from start of roll.
- Night Shoulder (23:00-23:30 & 06:00-07:00) departure noise limit of 89dB(A) L_{max} at 6.5km from start of roll.
- Night (23:30-06:00) departure noise limit of 87dB(A) L_{max} at 6.5km from start of roll.

Figure 14: 24 Hour Period Of Easterly Operations (Runway 08R) Illustrating Arriving Aircraft (Red Tracks) and Departing Aircraft (Green Tracks) Only

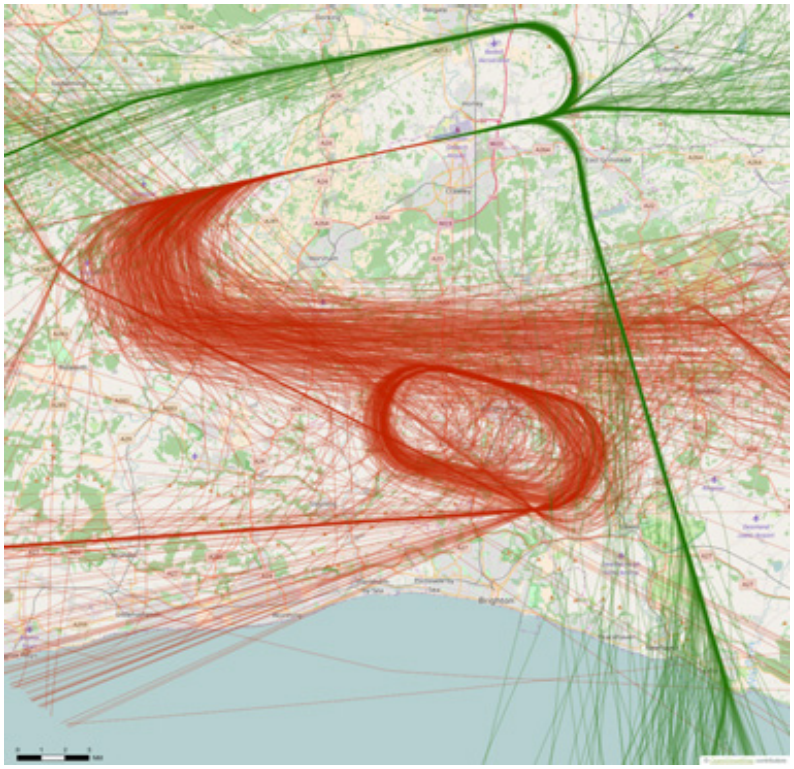
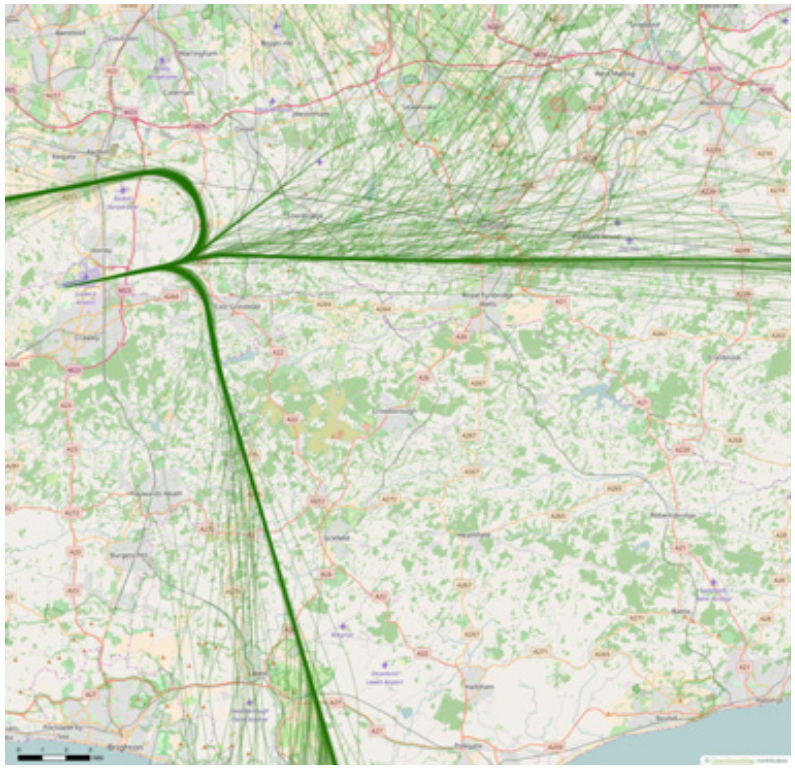


Figure 15: 24 Hour Period Of Easterly Operations (Runway 08R) Showing Departures Only – Map 1 of 2



ANNEX SEVEN

GENERAL MAPS

Figure 16: 24 Hour Period Of Easterly Operations (Runway 08R) Showing Departures Only – Map 2 of 2

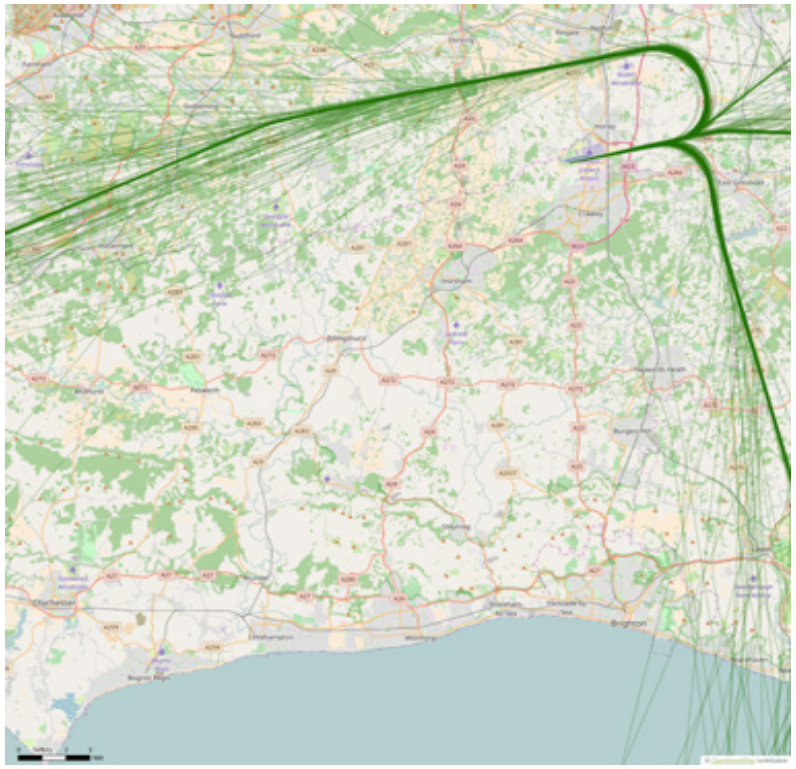


Figure 17: 24 Hour Period Of Easterly Operations (Runway 08R) Showing Arrivals Only - Map 1 of 2

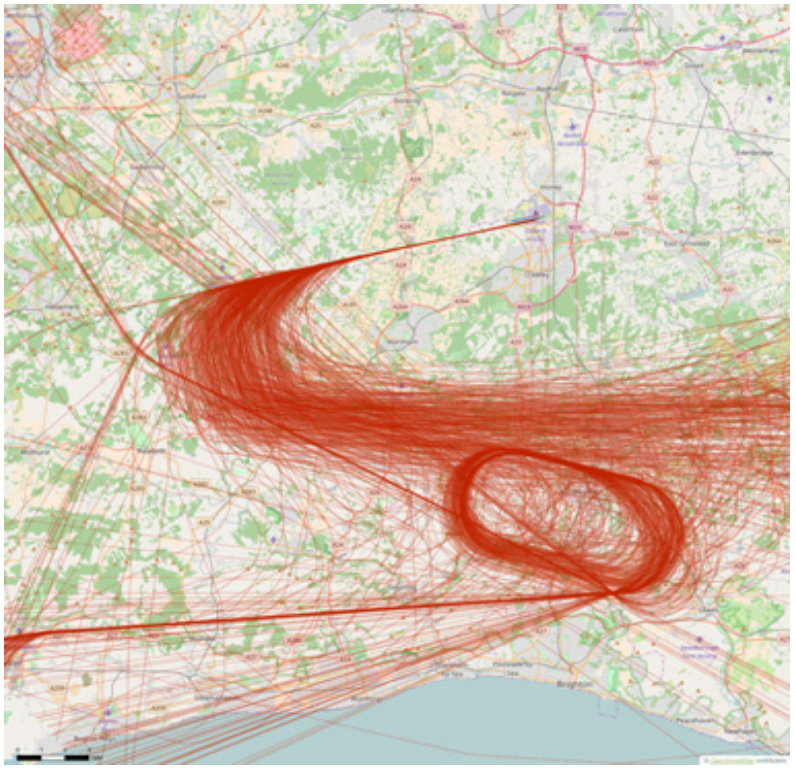


Figure 18: 24 Hour Period Of Easterly Operations (Runway 08R) Showing Arrivals Only - Map 2 of 2

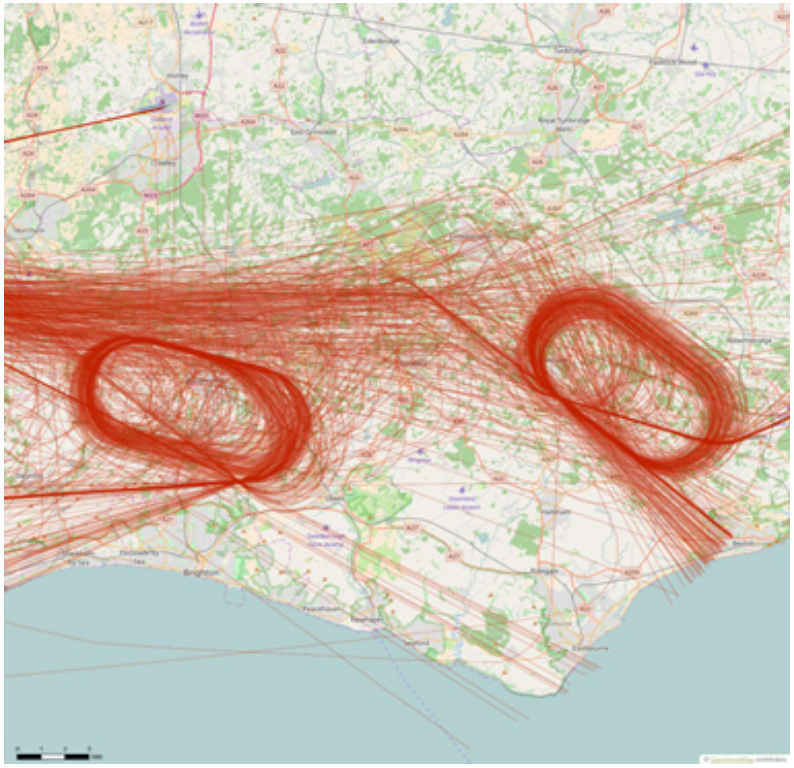
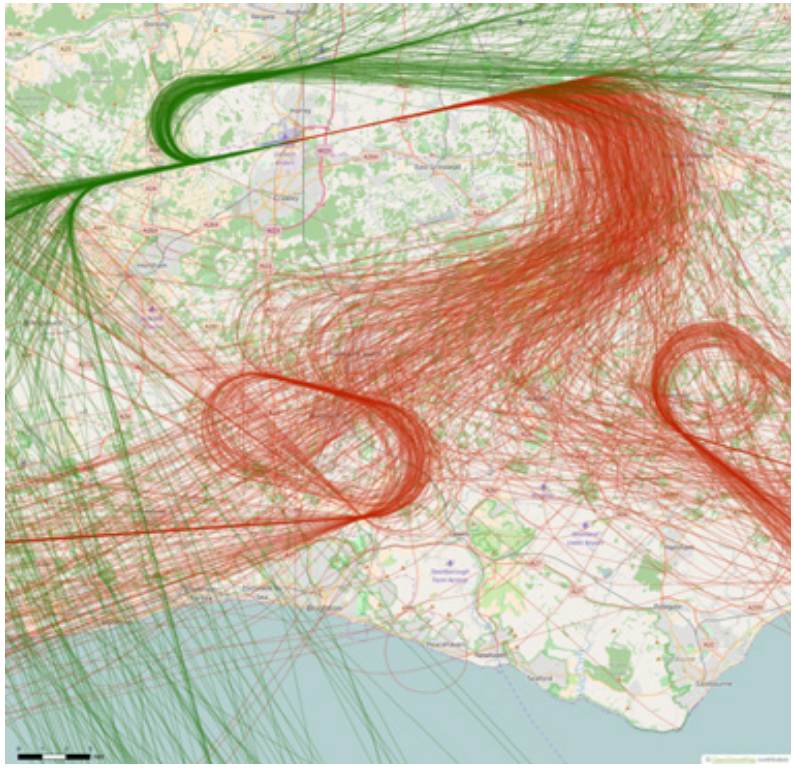


Figure 19: 24 Hour Period Of Westerly Operations (Runway 26L) Illustrating Arriving Aircraft (Red Tracks) and Departing Aircraft (Green Tracks) Only



ANNEX SEVEN

GENERAL MAPS

Figure 20: 24 Hour Period Of Westerly Operations (Runway 26L) Showing Departures Only – Map 1 of 2

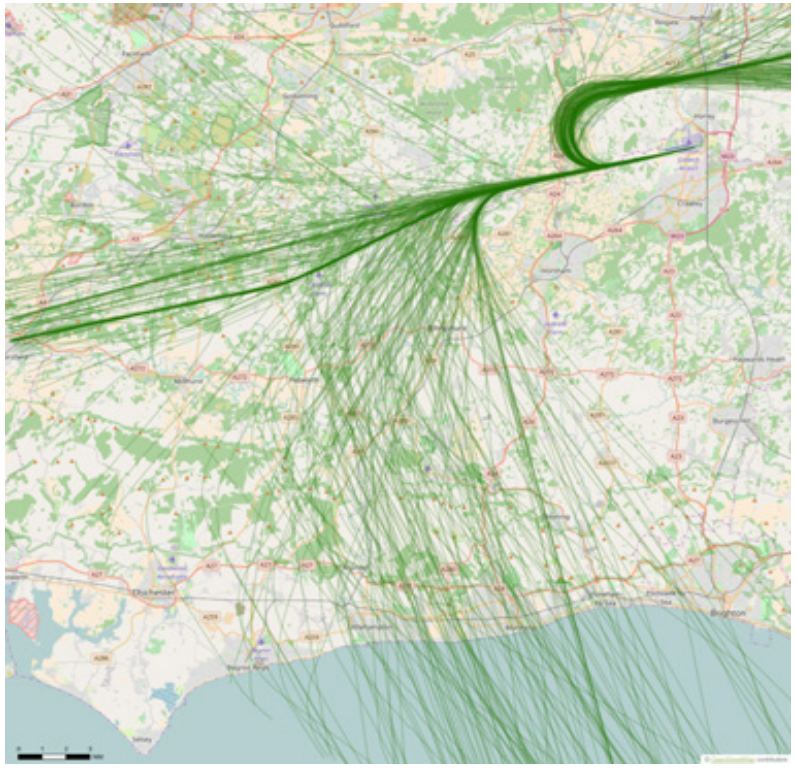


Figure 21: 24 Hour Period Of Westerly Operations (Runway 26L) Showing Departures Only – Map 2 of 2

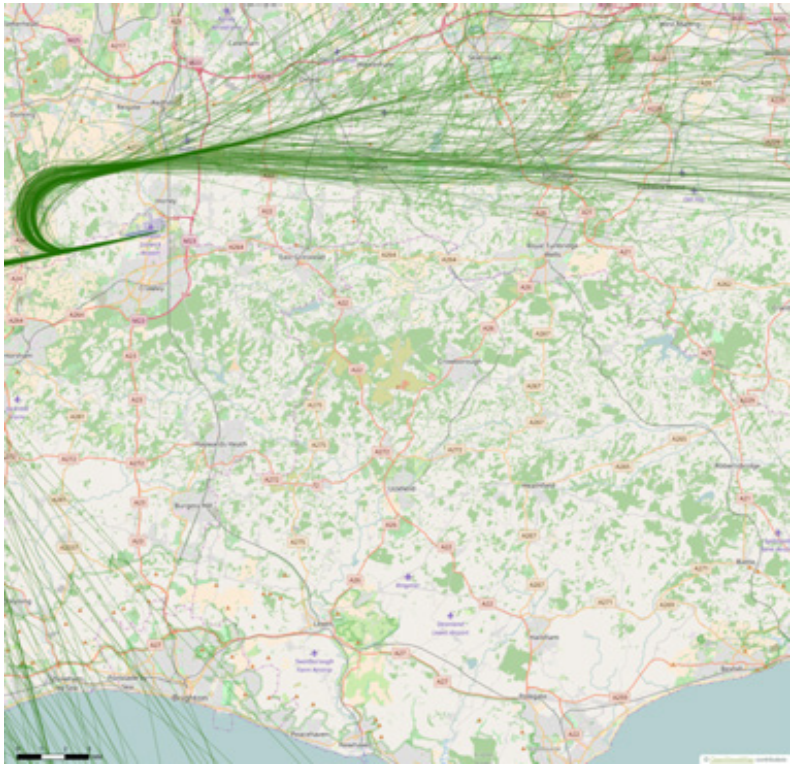


Figure 22: 24 Hour Period Of Westerly Operations (Runway 26L) Showing Arrivals Only – Map 1 of 2

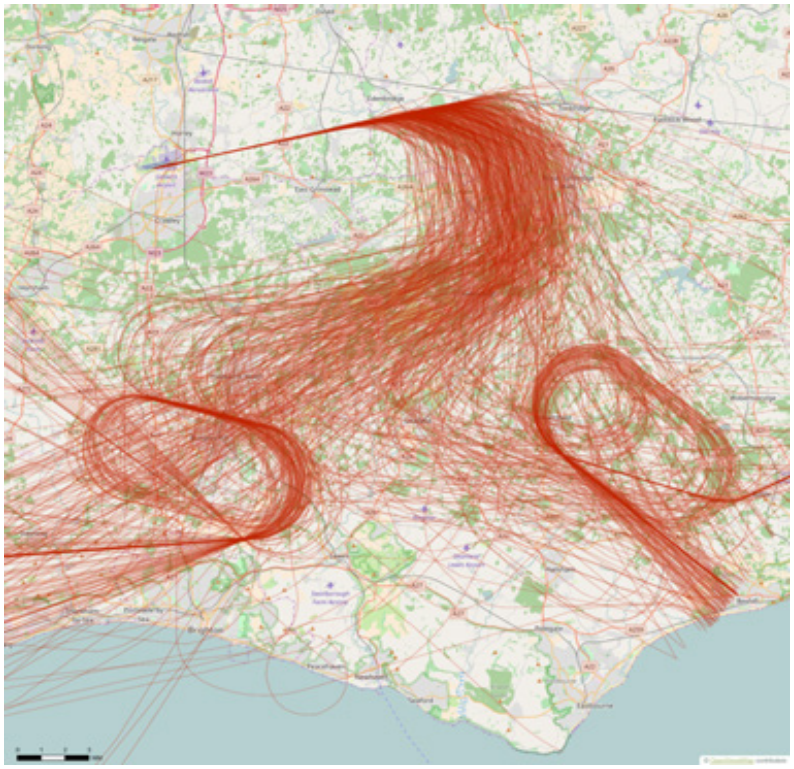


Figure 23: 24 Hour Period Of Westerly Operations (Runway 26L) Showing Arrivals Only – Map 2 of 2

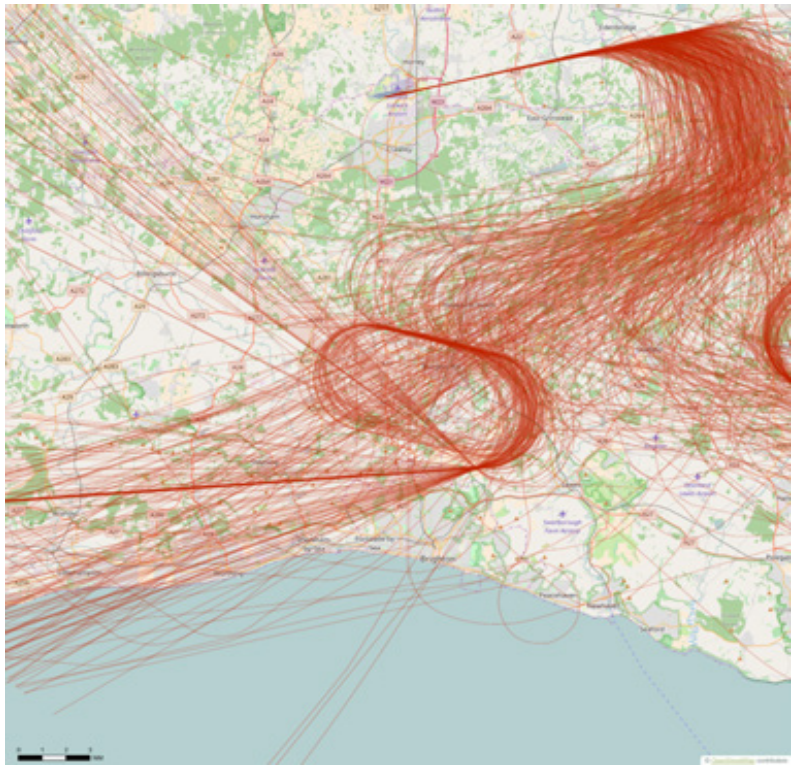


Figure 24: Map Illustrating the Location of the Noise Preferential Routes, the associated Standard Instrument Departure route and the vectoring altitude at London Gatwick

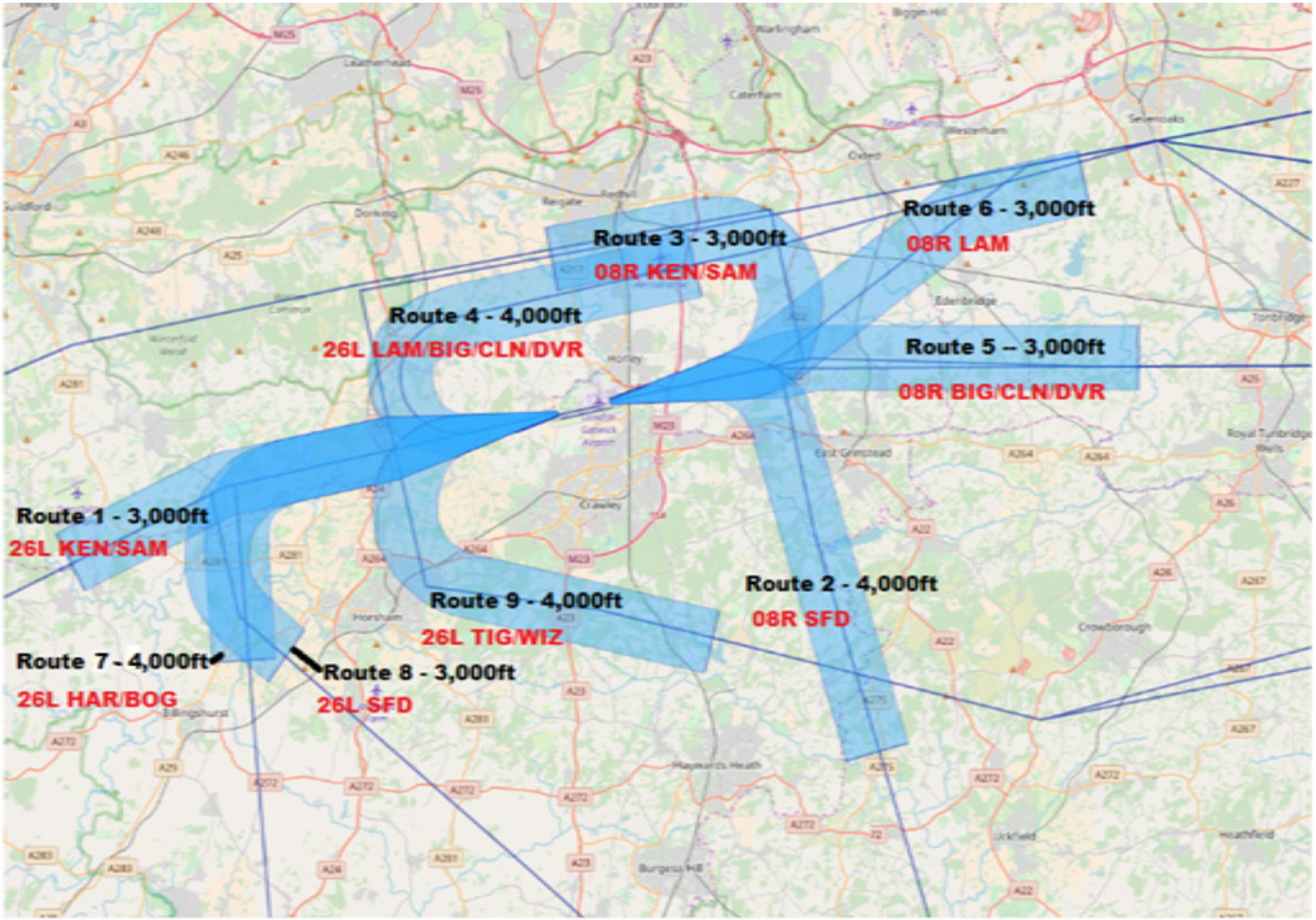


Figure 25: Map Illustrating the Postcode Location of Aircraft Noise Complaints Received for the Period 1 January 2017 to 31 December 2017 - Map 1 of 4

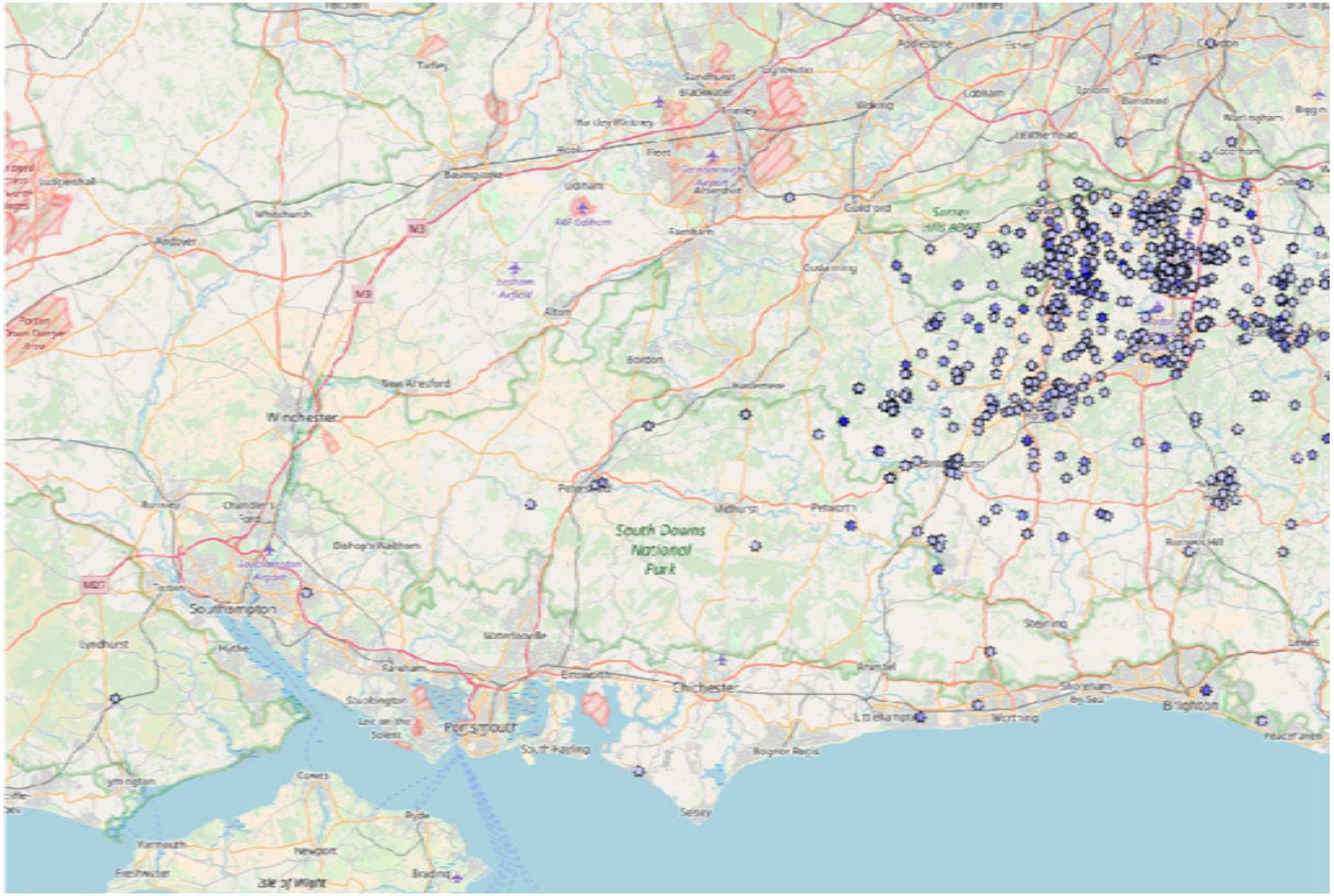


Figure 26: Map Illustrating the Postcode Location of Aircraft Noise Complaints Received for the Period 1 January 2017 to 31 December 2017 - Map 2 of 4

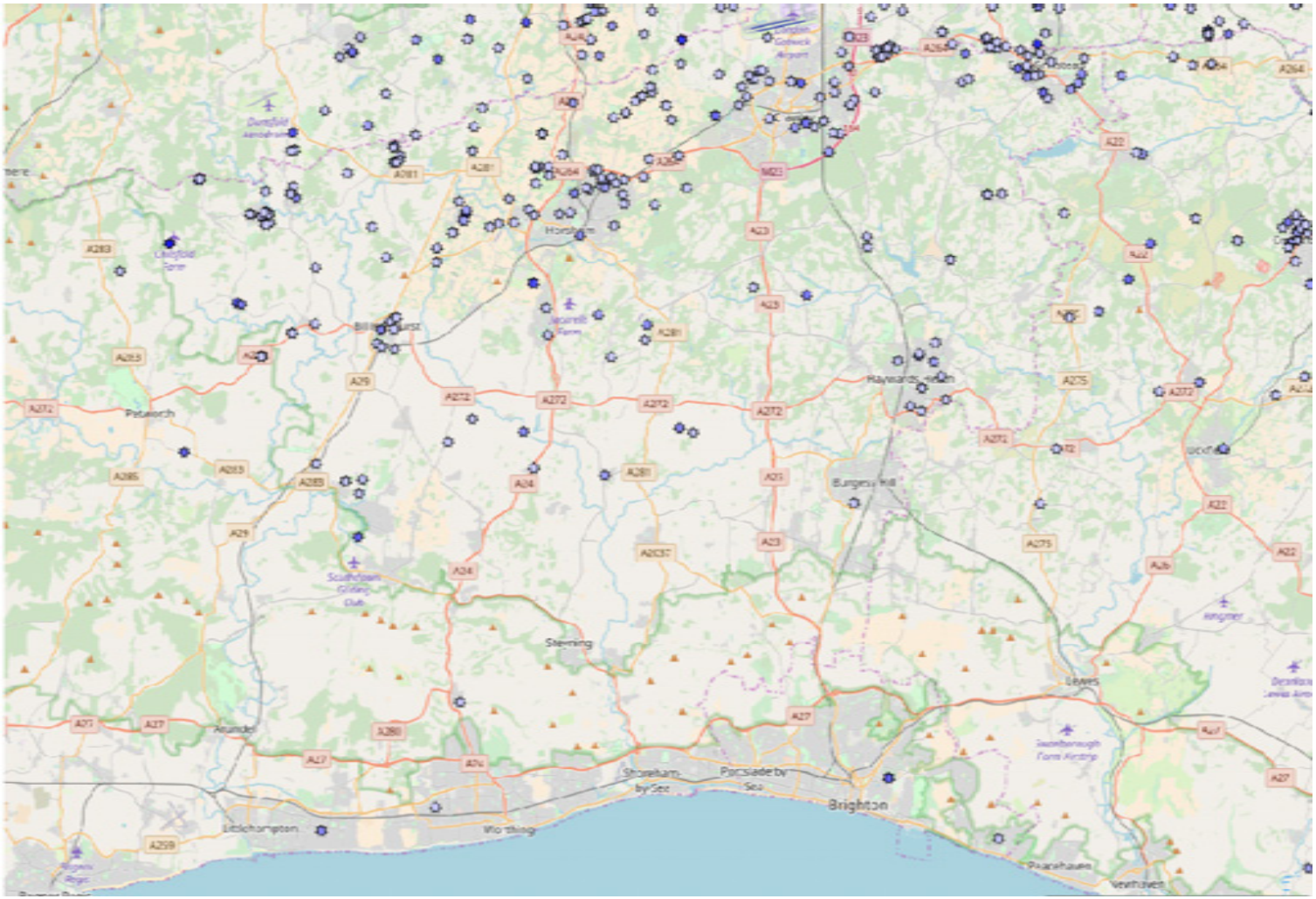


Figure 27: Map Illustrating the Postcode Location of Aircraft Noise Complaints Received for the Period 1 January 2017 to 31 December 2017 - Map 3 of 4

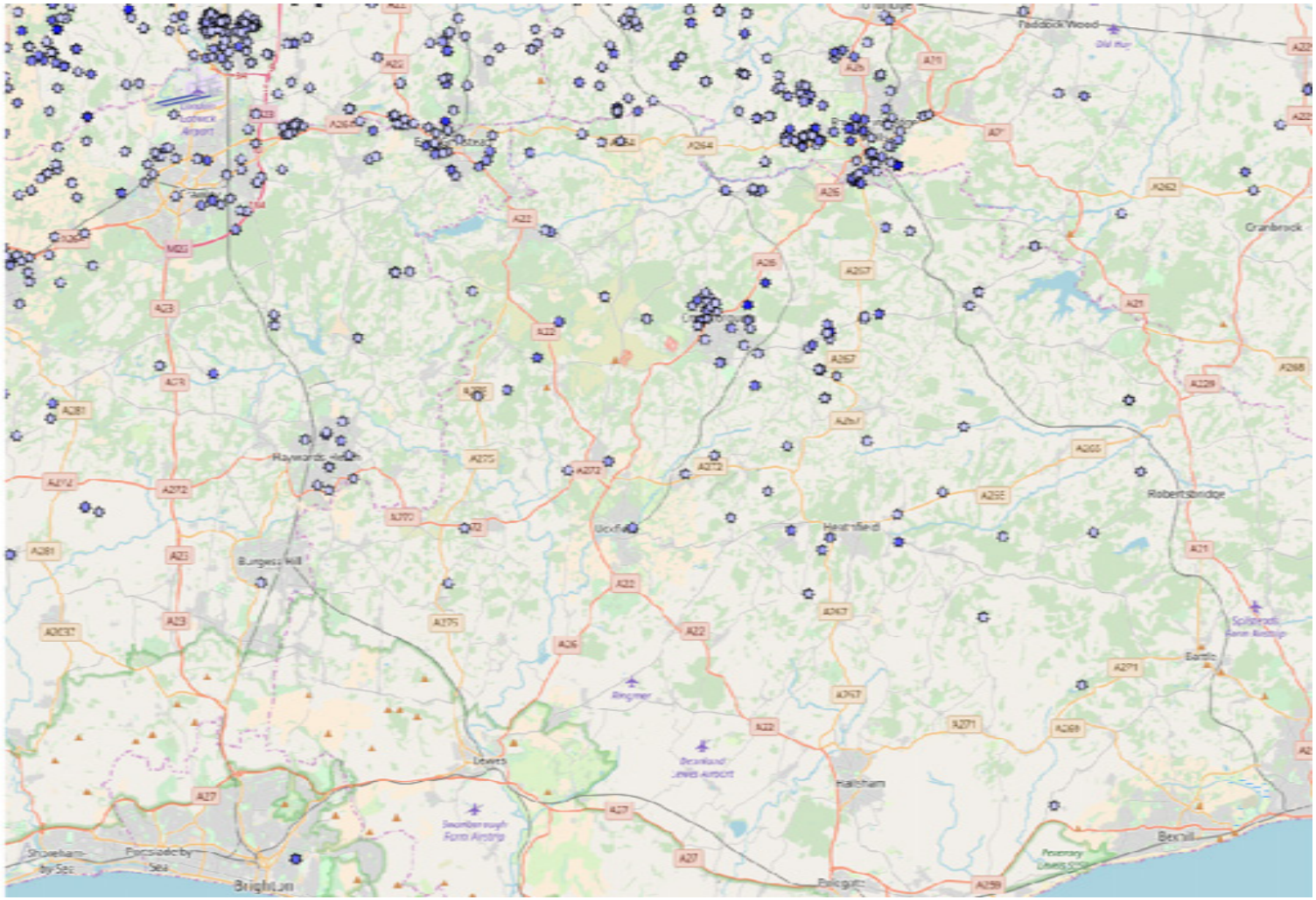


Figure 28: Map Illustrating the Postcode Location of Aircraft Noise Complaints Received for the 1 January 2017 to 31 December 2017 - Map 4 of 4

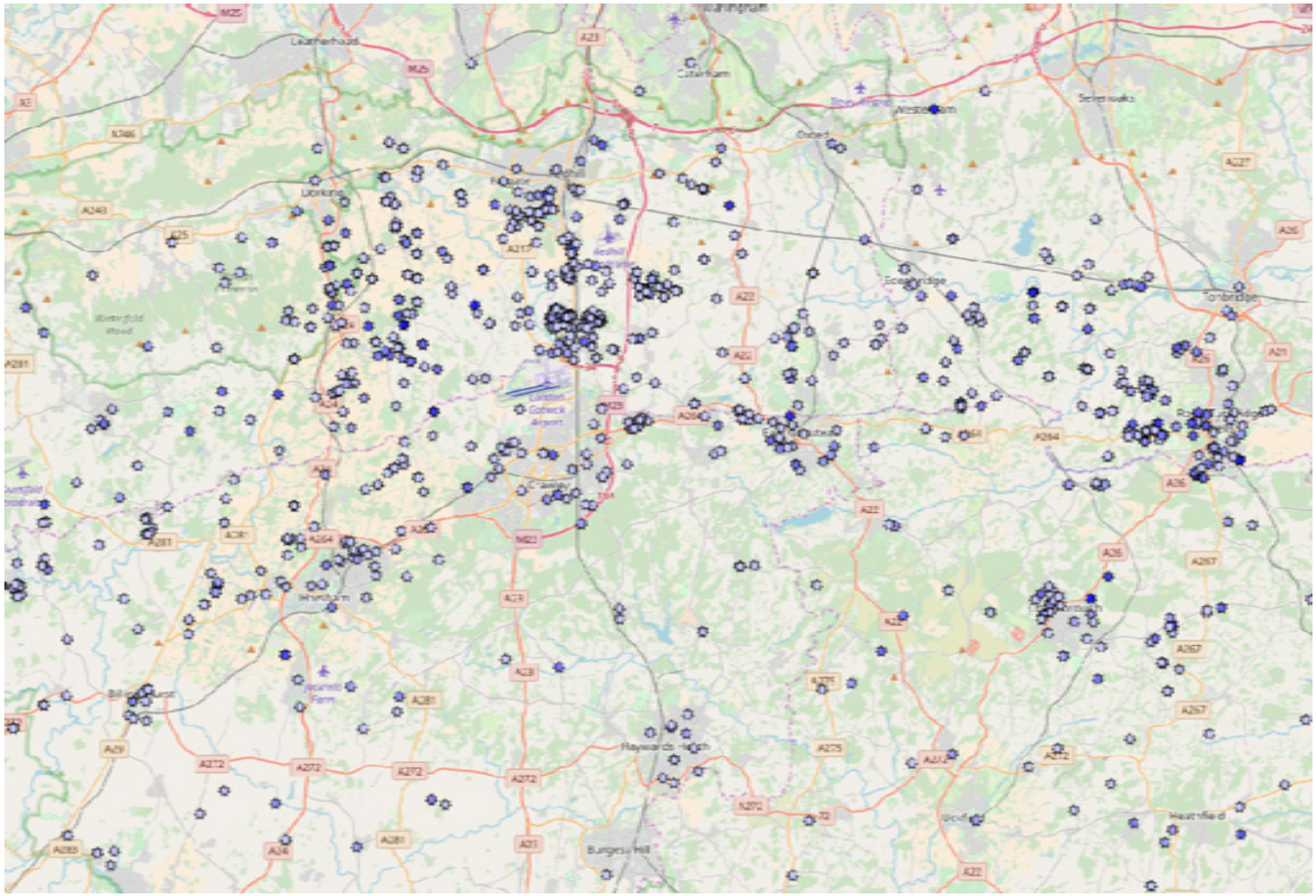
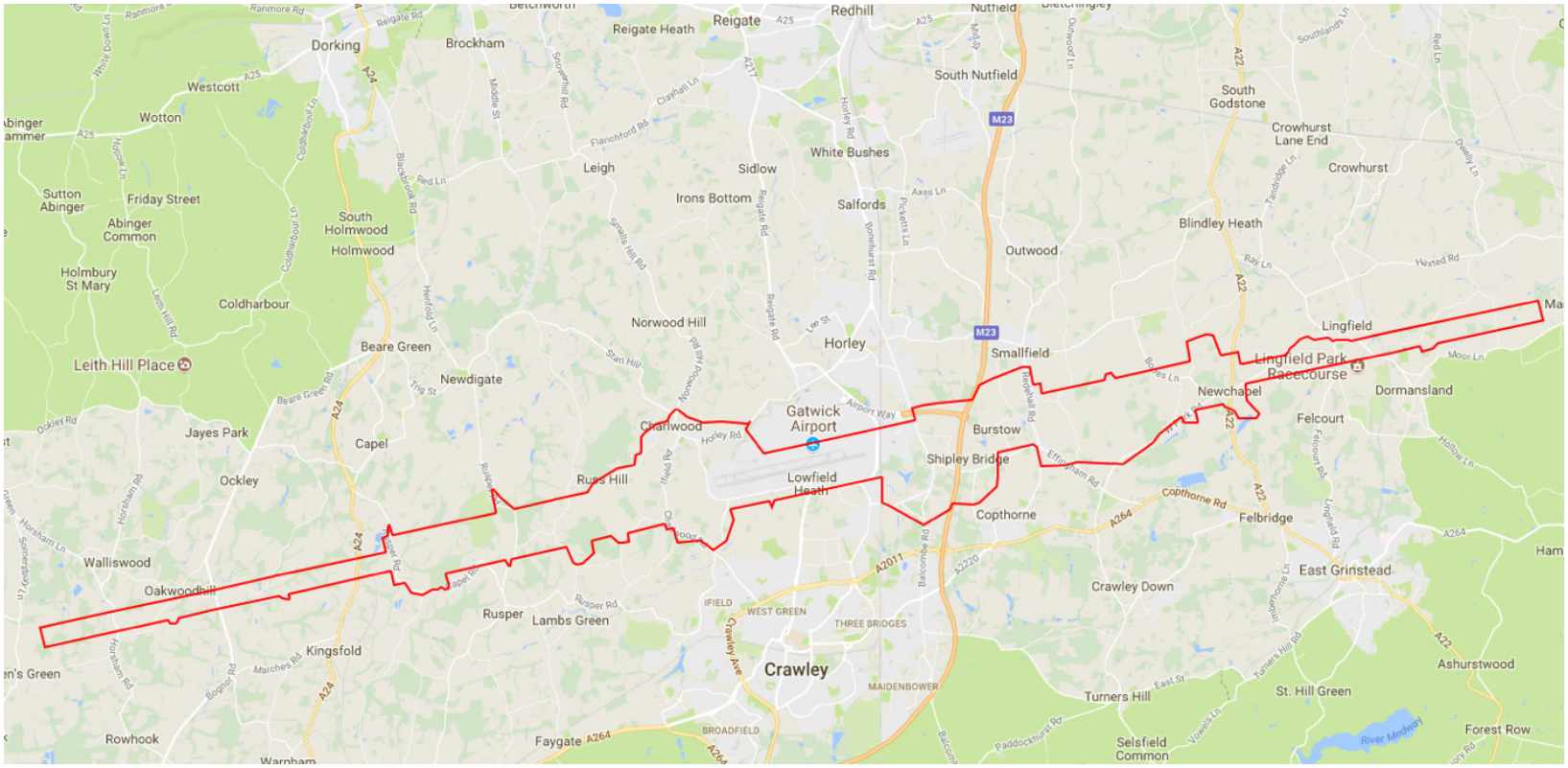


Figure 29: Map Illustrating the Boundary of the Gatwick Airport Noise Insulation Scheme



ANNEX SEVEN

GENERAL MAPS

Figure 30: Gatwick Airport Ltd Home Owner Support Scheme Boundary

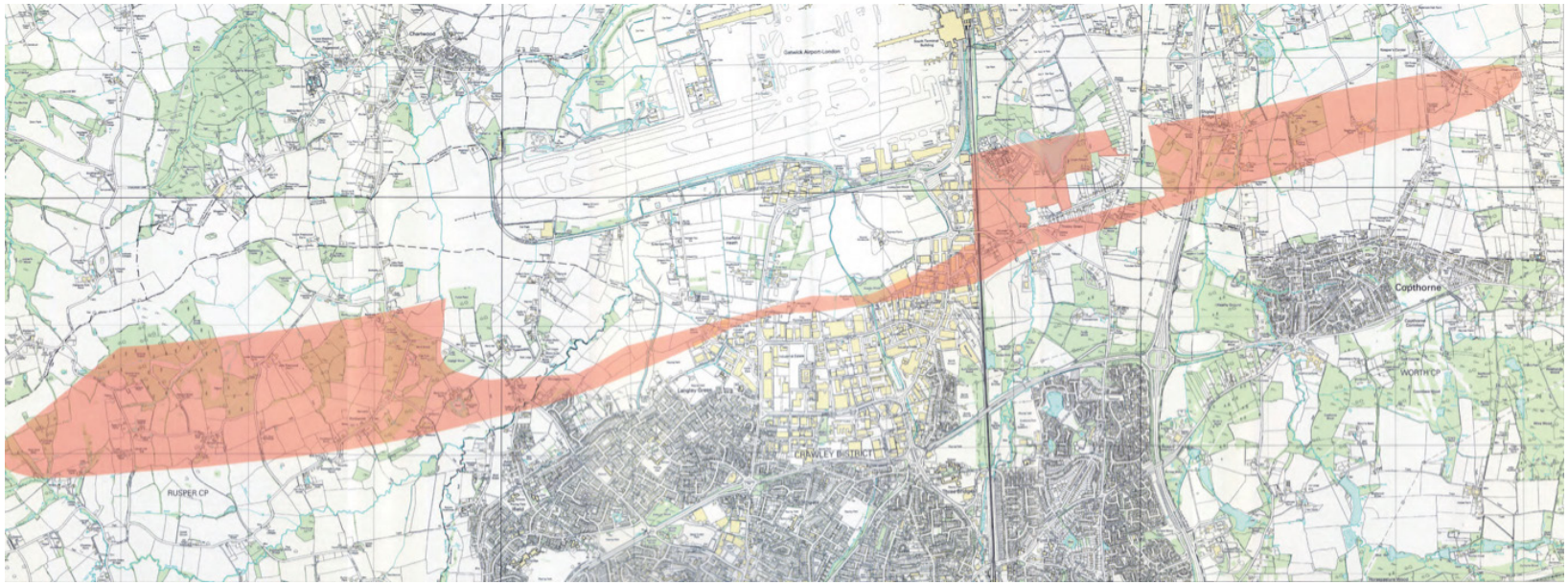


Figure 31: Gatwick Airport Ltd Property Market Support Bond Scheme Boundary

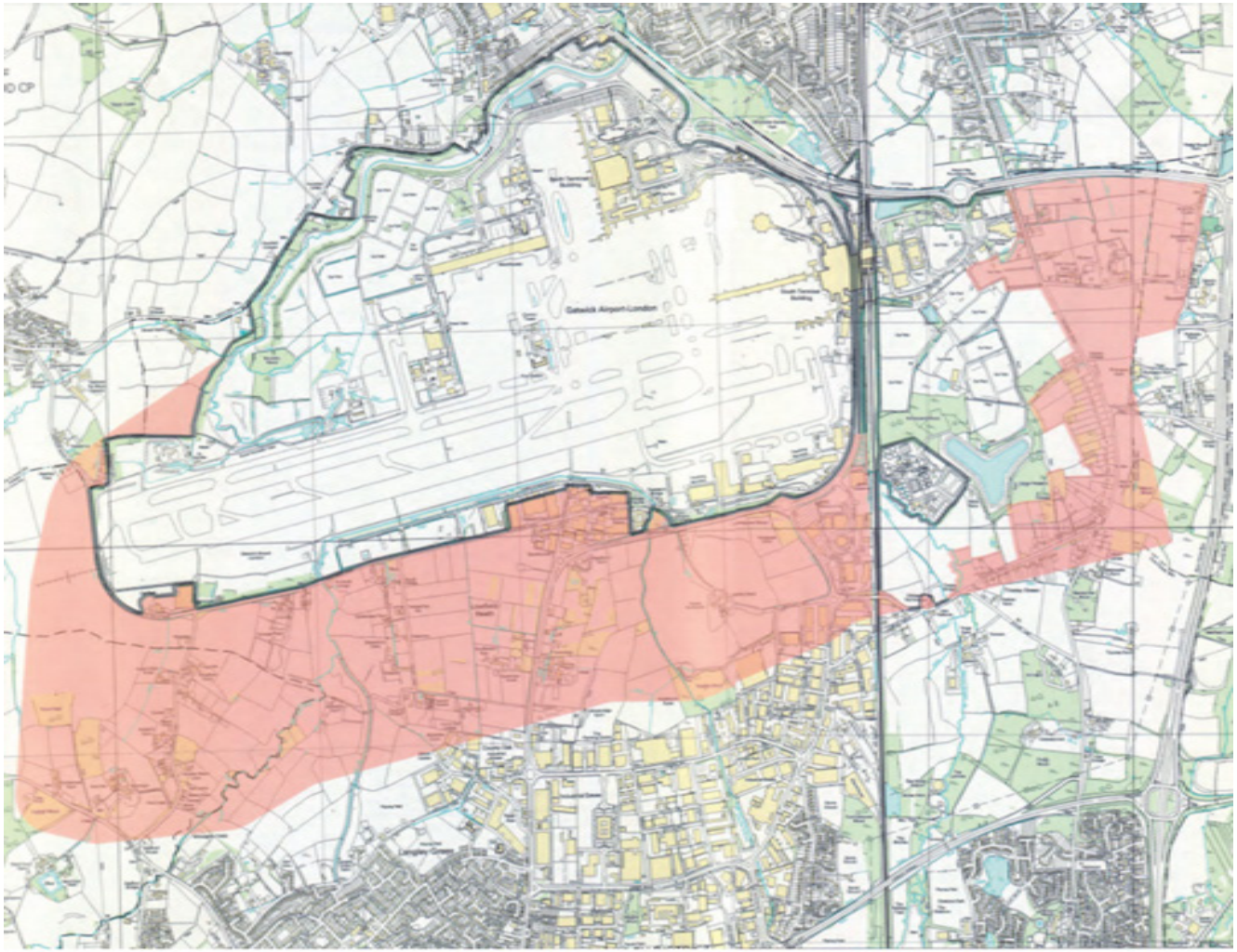


Figure 32: Gatwick Summer 2015/Winter 2015-16 L_{Aeq} 6.5hr Night 55dBa Contour

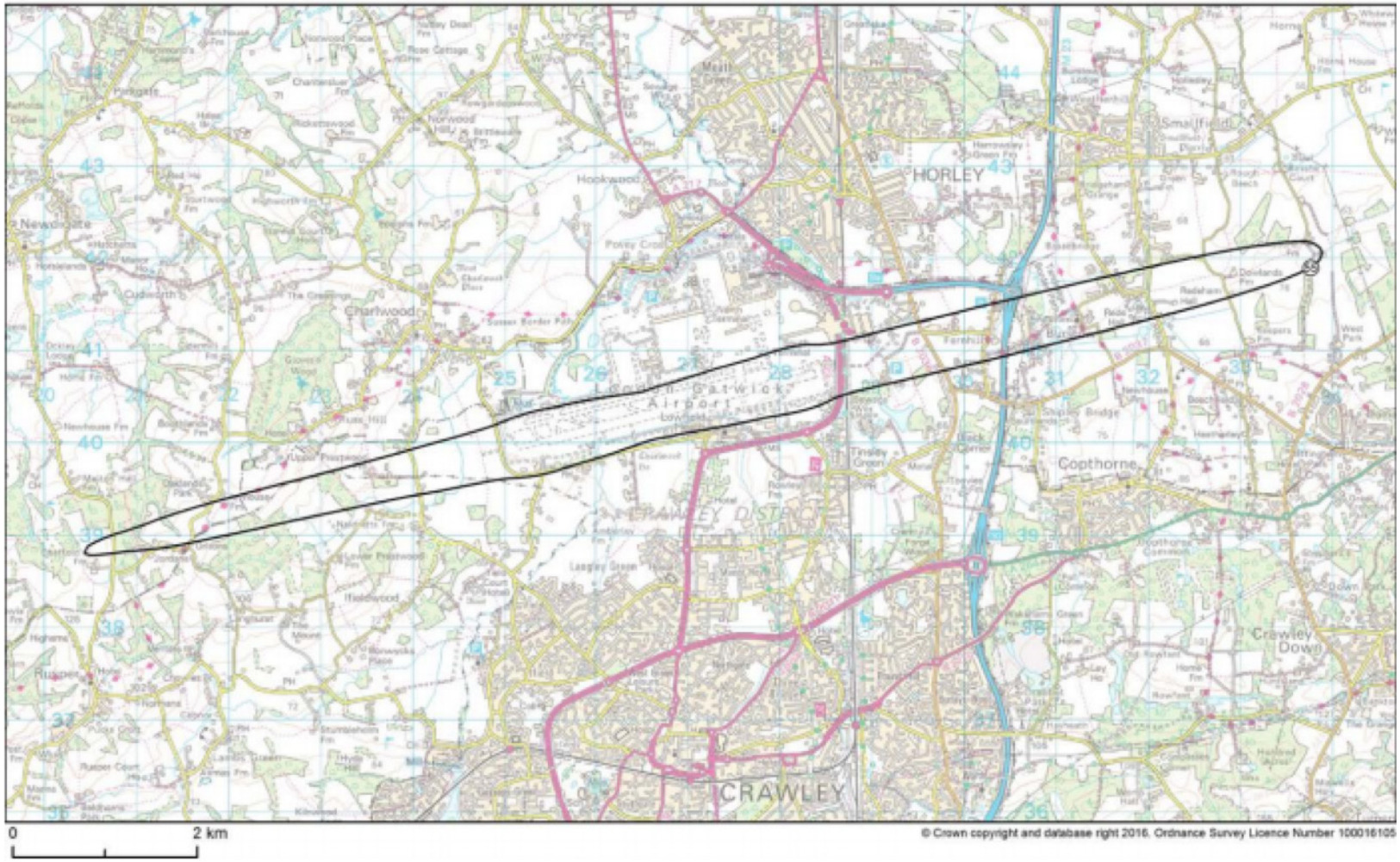


Figure 33: Estimated current financial cost to Gatwick Airport Ltd of noise management

TYPE	DESCRIPTION	APPROXIMATE ANNUAL COST
Noise insulation and mitigation schemes	Acoustic insulation, relocation scheme, insulation of noise sensitive community buildings and vortex strike scheme.	£950k (varies)
Staff costs	Salaries for staff engaged with noise and airspace related activities.	£850k
Airspace change costs	Costs associated with airspace change activities including LAMP, introducing R-NAV1 SIDs etc.	£710k (varies)
Noise Management Board	Management and maintenance of the board	£550k
	NMB airspace initiatives	£600k
	Independent technical support for the Community Noise Groups.	£40k
Noise and Track Keeping system costs	Software licences, development support and maintenance of noise monitoring equipment.	£300k
Section 106 Costs	Annual S.106 payments.	£206k
Research and Consultancy	Research activities and consultancy associated with Section 106 verification, Decade of change verification.	£150k
Publications and communications	Seminars, venue hire, noise related publications, documents and maintenance of the airspace and noise website.	£100k
Noise Contours	Fees for the development of the annual noise contours.	£25k
Community Noise Reports	Independent reporting and studies.	£15k
Freepost costs	Freepost licence and postage costs incurred.	£7k
Fines	Departure noise limits and track-keeping.	£1.5k (varies)*

SOURCE – GATWICK AIRPORT LTD

* Cost charged to the aircraft operator concerned and monies forwarded to the Gatwick Airport Community Trust.

09

ANNEX NINE A

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

Feedback on the list of draft Action Plan Actions was received from the following organisations:

- Crawley Borough Council;
- Horsham District Council;
- Reigate and Banstead Borough Council;
- Surrey County Council;
- West Sussex County Council;
- The Gatwick Airport Consultative Committee (GATCOM), including:
  - o Report from the Secretariat and Technical Advisor to the GATCOM Steering Group dated 4 January 2018;
  - o Final Response dated 2 February 2018.

In addition, a letter dated 15 December 2017 from the Noise Management Board Community Noise Groups and the Gatwick Area Conservation Campaign was received setting out their collective view on the draft Action Plan Actions and issues relating to the interpretation and implementation of Government Policy. A document containing further feedback was received on 16 February 2018.

The following pages include details of feedback received and also suggested Action Plan Actions to be included and the Gatwick Airport Ltd response is underneath each item in blue text.

KEY THEMES IN THE FEEDBACK RECEIVED

1. The link between noise and the adverse impacts on health is becoming ever stronger.

GATWICK AIRPORT RESPONSE

This is acknowledged, a recent study (Aircraft noise and cardiovascular disease near Heathrow Airport in London: small study area. Hansell et al (2013); British Medical Journal, 347, f5432) around London Heathrow Airport examined risks for hospital admission and mortality for stroke, coronary heart disease and cardiovascular disease for around 3.6 million people living near London Heathrow airport. Both daytime (LAeq,16h) and night-time (Lnight) aircraft noise exposure were related to increased risk for a cardiovascular hospital admission. Compared to those exposed to aircraft noise levels below 51 dB in the daytime, those exposed to aircraft noise levels over 63dB in the daytime had the following higher chance of a hospital admission:

- 24% for a stroke,
- 21% for coronary heart disease,
- 14% for cardiovascular disease.

Similar effects were also found between aircraft noise exposure and mortality for stroke, coronary heart disease and cardiovascular disease.

2. An acknowledgement of the extensive range of noise management activity undertaken by Gatwick Airport Ltd to date and further activities proposed for the coming five years. However, it must be recognised that residents remain affected by increasing absolute levels of noise, arising from a net increase in aircraft movements which has offset many of the technological and operational improvements. In response

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

to this, the action plan should give residents confidence that Gatwick Airport Ltd is committed to sharing benefits of noise management progress, in the sense of an outcome of absolute noise reductions (or as a minimum, no further increases), even in a context of growth.

GATWICK AIRPORT RESPONSE

It is accepted that there is an extensive range of activities undertaken by the airport both historically and also in the future. The establishment of the Noise Management Board has heralded a step-change in how the airport engages with local communities and collaboratively identifies areas for improvements and establishes a workplace for their development and introduction.

The airport is growing and the 2017 Aviation Policy Consultation sets out at para 3.14 that:

"Industry should, as far as is practical, proactively seek to avoid, minimise and mitigate adverse noise impacts, building on existing best practice. This is consistent with the overarching policy principle that the benefits of noise reduction brought about by new technology should be shared between industry and those affected by aircraft noise. This means that communities should benefit from noise reductions, while industry should have space to grow sustainably and serve passenger demand".

By "industry" Government means manufacturers, airlines, air traffic control and airports. Implicit in the Government's calculation is that, between now and 2050, manufacturers will continue to invest in research and development to make aircraft quieter and airlines will continue to invest in the new aircraft types, so that overall, noise per movement will decrease.

Further, Government expects that new technology will bring other benefits including:

- airspace changes enabling reductions in the numbers of people overflown on departure and arrival ; and
- other airspace and aircraft performance improvements to enable faster climbs and quieter descents.

The investment by industry thus provides a "dividend" which results in the amount of noise made by each aircraft reducing gradually over time. This is the share that the Community gets in the investment made by industry, together with the wider benefits both locally and to the national economy brought by aviation.

Thus, in the overall policy terms the "sharing benefits of noise reduction between industry and communities in support of sustainable development" is in the context of an expectation that industry will continue to invest, communities should continue to benefit from noise reductions, and that industry "should have space to grow sustainably and serve passenger demand".

3. Government Policy is confused and contradictory. The actions set out in Gatwick's current NAP have not achieved the END's aim of avoiding, preventing or reducing the impacts of noise. The current NAP has also failed to achieve the government's noise policy objectives, most specifically to "reduce and mitigate noise as airport capacity grows". And the overall objective of reducing noise has not been achieved.

GATWICK AIRPORT RESPONSE

The Government's current aviation noise policy is encapsulated in the 2017 Airspace Policy Consultation Response as follows:

"The government's overall policy on aviation noise is to limit and, where possible, reduce the number of people in the

09

ANNEX NINE A

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

*UK **significantly** affected by aircraft noise, as part of a policy of sharing benefits of noise reduction between industry and communities in support of sustainable development".*

The 2013 Airports Policy Framework (2013 APF) set the sustainable development of airports in the wider context of the National Planning Policy Framework (NPPF 2012), the NPSE (2010), and the UK's climate change commitments. It states that Government wants to make best use of existing airport capacity, this again would appear to the layman to be contradictory to the aviation noise policy as detailed above.

Gatwick Airport Ltd recognises that, at times, Government Policy can appear confused and contradictory. It is for these reasons, and in response to challenges made by the Community Noise Groups that sit on the Noise Management Board, that the airport commissioned a Review of Government Noise Policy and Strategy.

The basic constituent of the above "to limit and, where possible, reduce the number of people in the UK significantly affected by aircraft noise" appears in the 2003 Air Transport White Paper. The second element "as part of a policy of sharing benefits of noise reduction between industry and communities in support of sustainable development" first appears in the February 2017 Airspace Policy Consultation, however, it is present thematically in the 2013 APF, and indeed can be discerned in 2003 ATWP.
A matter of debate surrounds what constitutes 'significantly' as a number of people may consider themselves to be significantly affected whereas, according to policy, they are affected by low levels of **aircraft noise and so are annoyed, but not significantly affected**.

4. **The absence of a complete version of the revised action plan including population counts for the consultation meant there was no context against which to assess whether the proposed measures to reduce noise were appropriate to the scale of the problem, and given the potential obligation(s) that could be placed upon councils around the airport by the plan under UK legislation. All what was provided was a list of potential Action Plan Actions.**

GATWICK AIRPORT RESPONSE
Gatwick Airport Ltd initially circulated the list of proposed Action Plan Actions to the Gatwick Airport Consultative Committee, Crawley Borough Council and West Sussex County Council, as well the membership of the Noise and Track Monitoring Advisory Group and the Noise Management Board.

The full document, including feedback received, suggested Action Plan Actions for inclusion and the population counts was circulated to those organisations prior to the end of February 2018 to allow for any further comments to be forwarded to the GATCOM Steering Group meeting of 22 March 2018.

5. **The Noise Action Plan should commit to noise impact outcomes. It should specify clear, binding, noise impact reductions together with the time profile for achieving those reductions. The targets should be set based on the government's core policy principles of balance, benefit sharing and noise impact reduction. Gatwick's NAP should commit to noise impact reductions equivalent to or greater than the growth projected by the airport in the NAP period together with a further factor reflecting the growth enjoyed by the industry from 2013-2018 the benefits of which have not been shared with impacted communities. Alongside those noise outcomes Gatwick should set out the actions it intends to take**

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

to achieve them, but the risk that those actions fail to achieve the outcomes should be borne by the airport and the wider industry not by communities.

The actions set out in Gatwick's current NAP have not achieved the END's aim of avoiding, preventing or reducing the impacts of noise. The current NAP has also failed to achieve the government's noise policy objectives. There is no reason to believe that a similarly structured set of noise actions for the 2019-24 period would be any more successful in achieving the END's aims and the government's policy objectives. Gatwick has announced plans to continue to grow in that period. In the absence of appropriate action by regulators to enforce the Directive and government policy, that is likely to mean that the noise environment around the airport will continue to worsen, as it has done over the current NAP period. The government should not approve any NAP that fails to reflect these or comparable principles.

GATWICK AIRPORT RESPONSE

Action Plans are a legal requirement under Directive 2002/49/EC relating to the Assessment and Management of Environmental Noise. This Directive is commonly referred to as the Environmental Noise Directive or END. The requirements of the END are transposed in the Environmental Noise (England) Regulations 2006 as amended ("the Regulations"). Both the Directive and the Regulations contain no requirement to commit to binding noise impact outcomes.

In accordance with the Regulations, Gatwick has proposed actions which aim to manage noise issues and effects, including noise reductions. An approach which is consistent with the Government's Aviation Policy aim to limit and where possible reduce the number of people in the UK significantly affected by aircraft noise.

The Secretary of State for DEFRA, in liaison with the Department for Transport, will form a view regarding whether or not the submitted revised plan meets the requirements of the Regulations and, therefore, whether or not the plan is appropriate for adoption.

If the Secretary of State for DEFRA considers that the requirements set out in the Regulations are met, they will notify the airport accordingly that the Action Plan has been adopted. The Action Plan should then be published by the Airport Operator as a public document in an electronic format within 28 days.

If the requirements set out in the Regulations are not met, the airport operator will be required to make the necessary changes to the plan. Following revision, the revised plan will need to be resubmitted to the Secretary of State for DEFRA by an agreed date for further consideration.

6. **The Noise Action Plan noise reduction targets should be independently monitored and enforced. If the targets were not achieved, or appeared unlikely to be achieved, DEFRA's Secretary of State should intervene and require the airport to take measures, including limiting its growth, so as to achieve them.**

GATWICK AIRPORT RESPONSE

In accordance with the DEFRA guidance, the proposed actions within Gatwick's Noise Action plan have been assessed to determine their expected outcome and how this will be tracked.

In addition, as the proposed actions within the Gatwick's noise

ANNEX NINE A

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

action plan complement the Section 106 Legal Agreement with West Sussex County Council and Crawley Borough Council. Gatwick is subject to an independent review and audit of selected actions as part of the annual S106 monitoring process. The Final Annual Monitoring Report circulated to Crawley Borough Council and West Sussex County Council for circulation among the wider local authorities and the Gatwick Airport Consultative Committee. This report is published on the Airport website.

7. **Lack of clarity on who should produce the Noise Action Plan – "the EU legislation directs member states to produce noise action plans for major roads, railways, agglomerations and airports but does not stipulate which parties within the member state should produce these plans. In the UK, the Government has directed that Gatwick Airport Ltd shall produce that plan for Gatwick Airport. It is, therefore, the UK's noise action plan for Gatwick Airport; it is not Gatwick Airport Ltd's noise action plan".**

   The current NAP has not been an effective policy instrument primarily because it is based on inputs rather than outcomes and because it entirely ignores the significant growth that has occurred at Gatwick.

GATWICK AIRPORT RESPONSE

Action Plans are a legal requirement under Directive 2002/49/EC relating to the Assessment and Management of Environmental Noise. This Directive is commonly referred to as the Environmental Noise Directive or END. The requirements of the END are transposed in the Environmental Noise (England) Regulations 20064 as amended ("the Regulations").

The END requires Member States to produce strategic noise maps for the main sources of environmental noise, i.e. major roads, major railways, major airports and agglomerations every five years.

Action Plans must be drawn up by the airport operators and be based on the results of the noise mapping. The Regulations also require the Action Plans to be reviewed at least every five years and revised if necessary and whenever a major development occurs affecting the existing noise situation.

DEFRA is required under the END to submit summaries of each airport Action Plan to the European Commission no later than 18th January 2019. Each airport is also required to publish their Action Plan by this date. The regulations also require that each Action Plan is formally "adopted" by DEFRA's Secretary of State before the above steps can take place. DEFRA will contact each airport to agree a timetable for adoption and publication of their Action Plan.

8. **The Department for Transport is the noise regular for Gatwick Airport and as such the Government sets laws and rules relating to aircraft noise management however the airport operator also has a legal duty to operate the airport in such a manner as to make its facilities open to all types of aircraft operator which may result in noisier types of aircraft being operated.**

GATWICK AIRPORT RESPONSE

The Secretary of State for Transport has specific responsibility for noise control at Heathrow, Gatwick and Stansted airports. Certain noise mitigation measures are promulgated in the London Gatwick Aeronautical Information Publication (AIP) and the Flight Performance Team at Gatwick Airport reports compliance against these measures on a quarterly basis.

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

In addition, Gatwick Airport also has a Section 106 Legal Agreement in place with Crawley Borough Council and West Sussex County Council that includes further obligations and Action Plan Actions relating to both air and ground noise management. The Noise Management Board has also overseen the implementation of the recommendations of the Independent Review of Arrivals and its own, mutually agreed work plan.

The London Gatwick Conditions of Use document details all of the requirements that aircraft operators are required to adhere to, and also provides an overview of the aeronautical charges levied to airlines. While the airport operator cannot arbitrarily forbid a slot-holding airline to operate solely dependent on noise levels (subject to the aircraft type not being banned from operating in the UK/EU), it does detail how financial penalties and charging differentials can influence what aircraft type an airline may opt to operate in and out of the aerodrome.

All of the above illustrates that the noise mitigation measures stipulated by the Secretary of State do not operate in isolation and form part of a suite of measures aimed at managing noise at Gatwick Airport.

9. There should be a reappraisal of the format of Gatwick's Noise Action Plan, the obligations it imposes on the airport and the wider industry and the consequences of failing to meet those obligations.

GATWICK AIRPORT RESPONSE
The comments in response to item 5 refer.

10. It was disappointing to see the consultation largely restricted to the airport consultative committee, rather than the airport undertaking a wider direct consultation with residents affected by noise from the airport.

GATWICK AIRPORT RESPONSE
Section 3.4 of the "Guidance for Airport Operators on how to revise Noise Action Plans under the Environmental Noise (England) Regulations 2006 (as amended)" states that "It is envisaged that once the plan has been revised it will be presented to the Airport's Consultative Committee for comment, and any other appropriate bodies depending on the extent and nature of the revisions. The Airport Operator should summarise the comments received in the revised plan together with their response to the issues raised."

Gatwick Airport Ltd has circulated the draft list of Action Plan Actions and subsequently the full Noise Action Plan document to those organisations listed at the head of this section therefore the airport has gone above and beyond what was required of it.

11. The Government issued guidance to Gatwick Airport that the END Noise Action Plan review was to be 'light touch' while also instructing Gatwick to 'maximize its use of the airport'.

GATWICK AIRPORT RESPONSE
When Gatwick Airport Ltd was notified of the requirement to revise its Noise Action Plan, DEFRA advised that, as the airport already had a Noise Action Plan in place, a relatively light touch "review and revise" updating process was proposed. That said, in the draft list of proposed Action Plan Actions circulated at the commencement of the consultative process:

- 26 Previous Action Plan Action had been removed;

09

ANNEX NINE A

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

- 8 Action Plan Actions had been retained;
- 18 Action Plan Actions had been revised;
- 27 Action Plan Actions were new.

It is longstanding Government policy to use the capacity afforded by existing airport sites and stability in the airspace routing structure and this is also consistent with its policy "to limit noise". For example, the 2013 Aviation Policy Framework advocates that airports make the best use of existing runway capacity to improve performance, resilience and passenger experience, encouraging new routes and services.

12. The Department for Transport had the opportunity with the recent review of the Night Flight Restrictions to further reduce the number of movements and quota count, which it failed to do.

GATWICK AIRPORT RESPONSE

The Government published its decision on the next night flights regime for Gatwick in 2017 and this will be in place for the period October 2017 to October 2022. The movements limit remains unchanged however the night quota limit will be reduced as set out below.

During the summer season, the number of air traffic movements permitted during the night period is limited to 11,200 and 3,250 during summer and winter respectively. The night quota limits will be reduced to 5,150 in the summer (from 6,200) in 2018 and to 1,785 in the winter (from 2,000) in 2017/18. This will further incentivise the use of quieter aircraft by encouraging industry to plan its operations with sufficient headroom to ensure the limits can still be complied with in the event of unplanned disruption or changes to their schedules.

13. No initiatives by the Government are included in the list of draft Action Plan Actions.

GATWICK AIRPORT RESPONSE

While this draft END Noise Action Plan focusses on issues particular to Gatwick Airport and its environs, there are a number of initiatives underway at a Government level however it wasn't deemed appropriate to include them in this document.

A key development will be the establishment of an Independent Commission on Aviation Noise (ICCAN) by spring 2018. Within 2 years it will be decided whether ICCAN should be given statutory powers of enforcement.

ICCAN will advise on airspace change and share best practice. ICCAN will be a key consultee in both airspace change and planning processes and will have a role in verifying airports' monitoring and communication of noise impacts. ICCAN should have a role in the monitoring and quality assurance of airport noise measurements and reporting, as well as how such measures are enforced.

The Government hopes that ICCAN will rebuild trust between industry and communities and make sure noise impacts are properly and transparently considered.

ICCAN will not be responsible for investigating breaches in noise restrictions as "This requires a broad understanding of the context for individual breaches, such as safety and air navigation matters, to ensure that decisions take into account all factors".

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

14. The latest Noise Action Plan does not contain clear targets to reduce the impact of noise around Gatwick, especially at night.

GATWICK AIRPORT RESPONSE

As Gatwick Airport already has an Action Plan in place from previous rounds of END noise mapping, the current plan should be reviewed and revised to include, as necessary:

- updated details about the airport and its operation;
- the results of the noise mapping completed in 2017;
- the progress made against the actions described in the current Action Plan;
- updated information about relevant legislation and standards;
- updated relevant national and local policies;
- information about on-going actions; and
- information about any proposed new actions.

When revising their plans, airport operators should ensure that all the requirements set out in the regulations (listed above and described further in Annex C of the Guidance to Airport Operators) are met. Once the plan has been updated and finalised, the Regulations require that it be sent to the Secretary of State for DEFRA for formal "adoption".

GENERAL COMMENTS ON THE PROPOSED ACTION PLAN ACTIONS

The Action Plan should commit to noise impact outcomes. A step towards this would be the development and implementation of noise metrics, in consultation with the community, to track progress of the airport's noise reduction performance.

GATWICK AIRPORT RESPONSE

Addressed in response No. 5 and 6 which noted that this is a matter of Government Policy.

As a separate work stream, under the governance of the Noise Management Board, Gatwick is investigating both UK Aviation Policy and noise metrics to determine how progress, in terms of noise management and/or reduction could be reported.

It is important that Gatwick Airport Ltd identifies in the final list of actions some actions that should be treated as a priority where they could bring potential improvements to benefit communities in the short term or will improve monitoring and understanding early in the plan period. The Gatwick Airport Consultative committee has identified the following actions for consideration as priorities – Actions 9, 25, 31a 39 and 39a.

GATWICK AIRPORT RESPONSE

Gatwick is open to discussion with GATCOM which actions are considered priorities for implementation. This will form part of a subsequent discussion once the action plan has been adopted by DEFRA.

The proposed actions provide clear commitments from Gatwick Airport Ltd over the longer term to manage the noise impact around Gatwick. However, it is important that the actions

ANNEX NINE A

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

are outcome based and measurable. As currently drafted the wording of some actions does not clearly provide an indicator to satisfactorily measure success of delivering improvements to the noise climate. For example, Action 31 is the implementation of new initiatives but how will the success of the implementation of new initiatives be measured? Gatwick Airport Ltd is requested to review the wording of the actions to ensure they are outcome based and/or measurable where possible. It is also suggested that for those actions from the current END Noise Action Plan which have been removed, the rationale for their removal is provided in each and every case.

GATWICK AIRPORT RESPONSE

It is appreciated that the performance indicators for the actions could be improved and steps have been taken to update these in the revised Action Plan. However, in some cases it is not possible to provide, with a degree of certainty, the likely benefit of some actions as:

- the action may relate to a study for which the likely benefits are not known; or,
- the action may relate to a number of smaller studies which are planned to deliver benefits in a time period within the Action Plan duration, for example the Noise Management Board and its 2017/2018 and subsequent workplans. In these cases, the relevant oversight group for that action, such as the NMB, NaTMAG or GNMG will determine the individual success factors and likely benefit of each action. Where appropriate, this information will be made publicly available; or,
- the action may be implemented by Gatwick, but require action from an external party, which is outside of the control of Gatwick to deliver a benefit, for example airline fleet replacement programs; or
- not be applicable to that relevant action, for example the achievement of FPT key performance indicators.

With regard to historic actions which have now been removed from the plan, more information has been added to explain why it was removed from the plan. In most cases this is due to a step change in aviation noise management since the last Noise Action Plan. The work of the Airports Commission, DfT, CAA and Gatwick itself through the Independent Arrivals Review and the creation of the Noise Management Board has led to a drastically different baseline on which the Noise Action Plan is be developed. The change in landscape has resulted in the majority of the actions previously listed either being overtaken by recently completed, in progress or planned work.

With measures 1 to 8, 10-12, 13-19, and 20 to 26 in the proposed action plan there is no indication given as to what improvement these measures will deliver over the next 5 years. For example with measure 8 no figures are given for the proportion of scheduled day movements that are currently taking place at night so that the impact of the proposed action can be assessed over the next five years. Also, no indication is given as to how much of an impact these late running aircraft are currently having on night noise levels / residents affected.

GATWICK AIRPORT RESPONSE

It is appreciated that some actions are not outcome based and measurable and steps have been taken to review and update the performance indicators. As listed above, in some cases it is not possible to provide, with a degree of certainty, an accurate estimate of the improvement at this stage.

With regard to the actions in question, the Flight Performance Team quarterly and annual reports track progress against a number of key performance indicators and could be used as a

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

basis for tracking impact in comparison to historic periods.

SPECIFIC COMMENTS ON THE PROPOSED ACTION PLAN ACTIONS

Action 1 – Publishing the track fleet mix would allow year on year comparison. Could use an index which uses the Quota Count system to calculate average for summer/winter.

GATWICK AIRPORT RESPONSE
Fleet mix is currently reported to the Noise and Track Monitoring Group (NaTMAG). It is appreciated that the publication of this figure will allow for a year on year comparison and options for the publication of this figure will be explored, either through Action 1 (Charging differential to incentives the use of aircraft with the best in class noise performance) or Action 5 (Programme to rank airlines in relation to their overall performance for a range of noise and emissions impacts).

Action 3 – The objective of this action is not clear to us. Please could it be clarified?

GATWICK AIRPORT RESPONSE
This will incentivise through our aeronautical charging structure the increased use of the quietest and cleanest aircraft at Gatwick Airport.

Action 4 – This is an action in the current NAP, with a league table due to be published in 2014. The action is assessed as on-track (green) in the GAL's 2016 performance report published in January 2017. The action should be expedited. A worked-up proposal should be brought to the NMB by summer 2018 and an initial league table published in autumn 2018. The proposals should include financial incentives for performance improvement to the fullest possible extent.

GATWICK AIRPORT RESPONSE
The noise league table was listed on the previous noise action plan and was incorporated as part of the NMB 2017/2018 work plan to provide additional focus. Although the activity was listed on the NMB's 2017/2018 work plan, it was not designated as a high-priority and instead the NMB decided that additional focus should be placed on the delivery of Fair and Equitable Dispersal (FED), Continuous Descent Operations (CDO), Reduced Night Noise (RNN) and Noise Abatement Departure Procedures (NADP).

Despite not being a high-priority of the NMB, Gatwick and its independent consultants have commenced work on the scoping, design and implementation of a noise league table. This program is expected to be complete in 2019 and the proposals would be circulated to relevant stakeholders for comment.

Action 5 – As currently drafted this simply sets out GAL's legal obligation to consult on charges. We would like to see more detailed actions that reflect the proposals we (the CNGs) made to GAL in our response to its 2018/19 charges consultation (dated 29 September 2017).

GATWICK AIRPORT RESPONSE
In 2017, Gatwick has explained to the NMB the regulations and laws under which the airport's charging policy exist. Despite the NMB not being formal consultees in the charge consultation process, Gatwick agreed to circulate the relevant consultation papers for comment. The NMB provided formal response and these were considered by Gatwick and covered in its decision paper. As noted in the action, Gatwick will continue to seek the views of the NMB using the same process as above in future

ANNEX NINE A

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

airport charges consultations.

Action 6 –This does no more than set out GAL's legal obligations in relation to night flights. In addition to our comments on charges (5 above) we propose two additional actions:

(1) that GAL should voluntarily transfer responsibility for all derogation decisions to DfT and
(2) that GAL should not seek to grow night flights (particularly in the winter period where there is surplus permitted capacity) unless it can be clearly and independently demonstrated that there is net economic benefit in doing so taking account of all externalities.

GATWICK AIRPORT RESPONSE

The DfT provides oversight on the management of the night quota period, including reviewing decisions for dispensations made by the Airport. As noted in the 2017 DfT consultation on night flight restrictions, the Government had not received any evidence that dispensations are being used inappropriately. The DfT noted that they will continue to monitor the use of dispensations and carry out further work to consider whether the current process for issuing dispensations is appropriate. Gatwick will support any ongoing work as required.

With regard to night flights, the 2017 consultation reviewed the night movement and quota limits. The DfT concluded that it was not appropriate to make any changes to Gatwick's movement limits as reducing the number of night flights would add to the capacity constraints that are already facing the south east. In accordance with Government Policy, from the winter of 2017/18 a reduced the quota limit and a new quota class for certain aircraft types will be introduced by the DfT. Both initiatives will ensure 'we reap the benefits of a strong aviation sector over the coming years while continuing to limit or reduce the number of people significantly affected by aircraft noise at night, through ensuring that aircraft cannot get any louder and that a proliferation of movements by exempt aircraft is prevented.'

Action 9 – A mandatory ban should be imposed by the Department for Transport and that such an action by them should be included in the plan. Without prejudice to that view, until such time as that happens, the voluntary ban should occur well before 2024.

There is no reason why a ban on QC4 aircraft operating could not be introduced from summer 2019 rather than 2024.

The ban must apply to the night period (23:00 to 07:00) as defined under the EU directive as this plan is published as part of the END, not the 'core night' period (23:30 to 06:30)

During the summer period of 2017 there were in excess of 40 QC4 flights (all from the same airline) that were repeatedly late (scheduled day) departures in the night period which went on for 6 months, led to numerous complaints from residents, and also resulted in two breaches of the night noise departure limits (this compares to one such event in the previous five years). Given there were 10 such departures in the first month of the summer but the practice continued for another 5 months indicates that the current controls in place are insufficient to remain in place for another 7 years.

A ban on QC4 aircraft at night would follow past practice at the airport of improving the night noise regime by first stopping the scheduling of a given QC rated aircraft followed by a ban on the use of such aircraft at night.

This should be brought forward to 2019. Alternatively introduce a charging differential (like FOPP) where there is a significantly

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

increased charge from 2019 on QC4s at night.

Night noise is the most harmful of aviation noise.

Follow Heathrow's lead on introduction on a ban of night flights during the quietest period of the night.

This should be brought forward to 2019 at the latest.

GATWICK AIRPORT RESPONSE
The Secretary of State for Transport has specific responsibility for noise control at Heathrow, Gatwick and Stansted airports and the application of such a ban is a matter of Government Policy. As an airport operator, Gatwick cannot arbitrarily restrict or forbid a slot-holding airline to operate solely dependent on noise levels either directly, or through the application of a QC ban (subject to the aircraft type not being banned from operating in the UK/EU).

There are potential opportunities to introduce voluntary measures and these will be explored as part of this activity. Concerns regarding the timeframe in which the voluntary ban could come into effect are appreciated and the target has been brought forward to 2022 from 2024. However any voluntary initiative will be subject to agreement with the airlines.

Action 15 – The NMB's work programme envisages this work being completed by end 2018. The metric should therefore be reported from January 2019 at the latest. The proposals should include financial incentives for performance improvement to the fullest possible extent.

GATWICK AIRPORT RESPONSE
The action has been updated with a planned completion date of 2019. Proposals for financial incentives would be explored by Gatwick on conclusion of the study.

Action 21 – This action suggests that a single noise abatement procedure be specified for all routes out of Gatwick. As for any given route, a different procedure may be optimal, therefore action 21 is not sufficiently challenging. (Explanation: There are currently two types of departure procedure but at Gatwick Airport there is currently no preferred one. Unfortunately, which one is optimal for a given departure route depends upon many factors including where populations of residents exist beneath them. It may be the case that the procedure which is optimal for one departure route may not be optimal for another. We are suggesting that it is possible to specify different departure procedures for different routes in order maximise the overall noise reduction.)

The airport currently operates two noise abatement departure procedures from the airport, allowing the airline operator to choose which to use. Rather than settling on one of these procedures for all departure routes from the airport as proposed, each route should be assessed individually and the airport adopt the optimal departure procedure for a given route.

GATWICK AIRPORT RESPONSE
Noise Abatement Departure Procedures (NADP) are a general noise management procedure which are used between 800ft and 3,000ft. The procedure changes the location of noise benefit to either be close to the runway (NADP 1) or at an increased distance from the airport (NADP 2). The specific location of this benefit can vary depending on the aircraft in question and the airline's own specific procedures.

Gatwick currently has an ongoing program of works to investigate the potential benefits and dis-benefits of both procedures, this includes a consideration to noise, emissions and fly-ability. The

ANNEX NINE A

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

study has not concluded yet and is linked to an additional study commissioned by the DfT ANMAC group which is investigating NADP at Gatwick, Heathrow and Stansted.

Gatwick will await the results of these studies before implementing a preferred procedure.

However, in accordance with guidance published by the International Civil Aviation Organisation (ICAO), the airport cannot to mandate the use of a single NADP and instead only a recommendation can be made. In addition, ICAO Document 8168 restricts the total number of departure procedures to two per aircraft for a given airline, this requirement is mandated within EU Law EU OPS 1.235. These requirements both rule out the mandated use of a single procedure and the use of specific local procedures or variations. As a result, the use of anything other than a recommended single NADP is highly likely to increase the risk of non-compliance and remove the likely benefits that could be realised.

Action 22 – Equivalent reviews should be carried out on all other departure routes.

GATWICK AIRPORT RESPONSE
As reported in the minutes of NMB/8, initial efforts focussed on these two routes for legacy reasons, it was not intended to suggest that work on other routes is excluded and it was agreed that the Departures work objectives would be updated to include other departure routes. A newly revised NMB 2017/2018 work plan was circulated to NMB/9 to note this change and this Action has been updated accordingly.

Action 24 – With modern aircraft there is no excuse exceeding the departure limits. A review of the fines should be carried out and they should be set at a level that would far exceed any benefit that maybe gained from exceeding the noise limits.
The Department for Transport departure noise limits are now over 15 years old, with the limits set based primarily on aircraft that no longer exist in the fleet. Given that aircraft noise is still a health issue around the airport especially at night, the airport should introduce a revised set of departure noise limits specific to Gatwick (as allowed by the Department for Transport) to minimise any unnecessary noise impact on residents around the airport.

GAL should publish details of all breaches including the individual and aggregate amount of fines levied.

GATWICK AIRPORT RESPONSE
Noise limits are set by the Secretary of State for Transport which has specific responsibility for noise control at Heathrow, Gatwick and Stansted airports. The specific noise limits are noted within the Gatwick Airport - London (Noise Abatement Requirements) Notice 2004 and are noted in the AIP. As an airport operator, Gatwick cannot arbitrarily restrict or forbid a slot-holding airline to operate solely dependent on noise levels (subject to the aircraft type not being banned from operating in the UK/EU).

However, it is appreciated that these noise limits are now rarely broken and as part of Action 25, Gatwick will engage with the DfT via the ANMAC committee to commence a review of departure noise limits.

Details of fines levied are contained within the Flight Performance Team annual and quarterly reports.

Action 25 – GAL could introduce its own lower limits if the Department for Transport will not support a change. Bring forward to 2020.

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

GATWICK AIRPORT RESPONSE
The Secretary of State for Transport has specific responsibility for noise control at Heathrow, Gatwick and Stansted airports. The specific noise limits are noted within the Gatwick Airport - London (Noise Abatement Requirements) Notice 2004 and are noted in the AIP.

It is appreciated that these noise limits are now rarely broken and as part this Action, Gatwick will engage with the DfT via the ANMAC committee to commence a review of departure noise limits.

Action 27 – Whilst this undertaking is appreciated, it is felt that it should not form a part of a noise action plan. GAL should publish details of the aggregate amount provided under this and other compensation.

GATWICK AIRPORT RESPONSE
Whilst it is appreciated that this action is not directly related to noise, it is an important action to manage the potential impacts of aviation on the local community. Its inclusion as part of the Action Plan ensures awareness and performance tracking of the scheme.

Action 29 – The 2014 scheme should be expanded to include those within the 60 dB LAeq16hr contour.

2014 scheme expanded to include the 60dB LAeq16hr.

GAL should carry out a full review of its compensation schemes based on a polluter pays principle. Any person exposed to increased noise from GAL's operations should be able to claim compensation equivalent to that envisaged under the Land Compensation Act.

GATWICK AIRPORT RESPONSE
The specific recommendations will be included in the review proposed by Action 28 "we will continue a scheme that helps with the cost of acoustically insulting homes against the effects of aircraft noise. We undertake to review the scheme every 5 years to ensure it remains appropriate and relevant."

Action 30 – There are no proposed changes to NPRs with LAMP2, however if there is no other option available and a new NPR is introduced and new people are overflown then a lower figure should be considered.

GATWICK AIRPORT RESPONSE
Both the Property Market Support Bond and Home Owners Support Scheme are voluntary proposals developed by Gatwick and relate to measures which would be enacted should Gatwick be permitted and received planning permission to build a second runway.

As noted in the documentation for both schemes, the areas currently stated are based upon the relevant noise contours. If the second runway was permitted to be constructed, the boundary for the schemes would be extended to include any new properties which may fall within the revised contour. The airport will also any airport which were inside, but then fall outside of the boundary.

Action 31 – Include reference to publishing the annual report of the NMB which will list success of work program.

GAL should commit to noise impact reductions equivalent to or greater than the growth projected by the airport in the NAP period together with a further factor reflecting the growth enjoyed by the industry from 2013-2018 the benefits of which have not been shared with impacted communities.

09

ANNEX NINE A

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

GATWICK AIRPORT RESPONSE

The NMB publish an annual report on progress against its agreed work plan, this has been referenced in the performance indicator and reporting section.

Action Plans are a legal requirement under Directive 2002/49/EC relating to the Assessment and Management of Environmental Noise, commonly referred to as the Environmental Noise Directive or END. The requirements of the END are transposed in the Environmental Noise (England) Regulations 2006 as amended ("the Regulations"). Both the Directive and the Regulations contain no requirement to commit to binding noise impact outcomes. In accordance with the Regulations, Gatwick has proposed actions which aim to manage noise issues and effects, including noise reductions. An approach which is consistent with the Government's Aviation Policy aim to limit and where possible reduce the number of people in the UK significantly affected by aircraft noise.

In order to better measure noise performance, Gatwick has commenced work to identify noise metrics and reporting as part of Activity 2 of the NMB 2017/2018 work plan. As this study will require input from a wide range of stakeholders, the work stream has already been expanded to consider parties external to the NMB such as the Environmental Health Officers, GATCOM, NaTMAG, Gatwick Noise Monitoring Group as well as national bodies such as Sustainable Aviation and DfT ANMAC. Due to the wider applicability of this work, it has been included as a standalone action within the MONITORING AND REPORTING OUR PROGRESS section as Action 39a as follows "We will conduct a review of Government policy to identify new noise metrics and reporting to compliment the current noise contours and measure our noise performance."

Action 39 – The night contours should be for the whole night period (23:00-07:00) rather than the Quota Period (23:30-06:00). This is a requirement of the END which specifies 23:00 to 07:00 as night (not the lesser period of 23:30 to 06:00). 'Summer L_{eq} contours' is a repeat of the 'summer 16hr L_{eq} contours' mentioned in the first bullet point. The frequency/years for publication should be specified.

The Night contours should be for the whole night period (23:00-07:00) rather than the Quota Period (23:30-06:00).
'Summer L_{eq} contours' are a repeat of the summer 16hr L_{eq} contours above.

The action discusses the production of 'night quota period' contours. As this is an EU / UK government action plan the contours must be for Lnight (23:00 to 07:00). If the airport wishes to produce contours for the quota period in addition to the night period this would be welcome.

GATWICK AIRPORT RESPONSE

The contours listed in the draft action plan have been updated and now note:

- Summer 16 hour day Leq (actual)
- Summer 16 hour day (standard) L_{eq}
- Summer Night L_{eq} (actual)
- The above compared to the previous year.
- Summer Night 10 year average modal split L_{eq}.

These contours are produced by CAA ERCD upon direct request and tasking from Gatwick. This work was previously commissioned by the DfT. The 2016 contours were the first to be commissioned by Gatwick Airport Ltd.

Action 40 – GAL to commit to publishing noise contours no later than three months after the end of the period in question.

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

On every occasion that a noise contours reveals an increase in noise impacts GAL should, within a further three months, publish a remediation plan setting out the actions it intends to take to reduce noise impacts to a level consistent with our comment on action 31 above. The remediation plan should be submitted to and agreed with DfT as noise regulator for Gatwick and the NMB.

GATWICK AIRPORT RESPONSE
As Gatwick is now responsible for commissioning the noise contours from CAA ERCD, the airport is exploring contractual options to deliver the noise contours in a timely manner.

With regard to the noise contour increases, this is a matter of Government Policy as neither Directive 2002/49/EC relating to the Assessment and Management of Environmental Noise, nor the Environmental Noise (England) Regulations 2006 which transpose these requirements, require airports to undertake a review of their action plan following the publication of noise contours.

Via Action 39a, Gatwick will investigate noise metrics and reporting to better measure noise performance. This study will help shape and guide the implementation of the actions contained within this action plan to manage noise issues and effects, including noise reductions. An approach which is consistent with the Government's Aviation Policy aim to limit and where possible reduce the number of people in the UK significantly affected by aircraft noise.

Action 42 – Methods of complaint should be stated to include complaints through a webpage, free-phone telephone number (which may be to an answer-phone) or by letter to a free post address. (Note: Email is not suggested as that method is capable of abuse by the automation of the sending of emails.)

Following many complaints it has been agreed to re-instate a phone service for noise complaints. Reference to which should be included in this condition.

GATWICK AIRPORT RESPONSE
Currently, in accordance with the updated complaints policy revised after the Independent Arrivals Review, all complaints will need to be processed via Casper with a free-post facility available for those who don't have access to a computer or the internet. The various methods have now been listed on the action plan. In addition, following feedback gathered, the action has been expanded to include a target to re-introduce the telephone complaints system by the end of 2018.

Action 52 – This action has been included in order to "create a structure that has capacity to accommodate forecast traffic levels beyond 2040". Achieving desired traffic levels is not in itself an action related to noise reduction (it is more likely to be the opposite). It is suggested that this action should explicitly include undertakings to use the LAMP process to achieve reductions in noise.

Given the magnitude of what is being proposed here, in essence a complete redesign of the London airspace, this is an ideal opportunity to reduce the noise impact of the airport. At present the performance indicator is of no value unless it gives an indication of the noise benefits with and without LAMP in 2024.

GATWICK AIRPORT RESPONSE
The Action has been re-worded to include a noise benefit as follows "52. We will participate in all activities relating to 'LAMP2' – the redesign of the London Terminal Manoeuvring Area (LTMA) and en-route airspace to eliminate chokepoints, alleviate areas of intensive aircraft concentrations, reduce the number of people affected by noise and to create a structure that has capacity to

ANNEX NINE A

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

accommodate forecast traffic levels beyond 2040."

Action 53 – This is not an appropriate in a noise action plan; it is a noise creation action not a noise reduction action. Instead GAL should support the proposal in the CNG's paper on LAMP 2 that NATS and GAL, together with other London area airports as necessary, should develop new overarching principles for LAMP 2 which:

- reflect the government's aircraft noise policies, including that the benefits of growth should be shared between the industry and impacted communities and that there should be balance between the interests of the industry and those of communities impacted by it.
- rule out any increase in the number of people significantly impacted by aircraft noise, subject to consistency with principles of fair and equitable dispersal agreed or to be agreed
- give equal weight to increasing capacity and reducing environmental impacts, particularly noise.

GATWICK AIRPORT RESPONSE

The Action has been re-worded to include a noise as follows "52. We will participate in all activities relating to 'LAMP2' – the redesign of the London Terminal Manoeuvring Area (LTMA) and en-route airspace to eliminate chokepoints, alleviate areas of intensive aircraft concentrations, reduce the number of people affected by noise and to create a structure that has capacity to accommodate forecast traffic levels beyond 2040."

This wording is consistent with the Future Airspace Strategy (FAS) 2030 vision to establish "safe, efficient airspace, that has the capacity to meet reasonable demand, balances the needs of all users and mitigates the impact of aviation on the environment." In addition, managing environmental impacts, including noise, which is one of the three strategic drivers for modernising UK airspace alongside safety and capacity. Gatwick will continue to work with the CAA, DfT, NATS and other London airports to ensure that LAMP 2 can deliver a benefit for all in accordance with the Future Airspace Strategy.

SUGGESTIONS FOR INCLUSION OF FURTHER UNDERTAKINGS

Reduce the departure noise limits

This is a matter of regulation and should be for the Department for Transport to implement. See proposed Action 25. Gatwick Airport Ltd could introduce its own lower limits if the Department for Transport will not support a change. In either case it should be brought forward to 2020.

As there is no excuse for modern aircraft and rather old departure noise limits to exceed those limits, the fines should be increased. This should be for the Department for Transport to implement. Gatwick Airport Ltd could increase fines themselves if the Department for Transport doesn't.

GATWICK AIRPORT RESPONSE

As reported in the feedback to Action 25, the Secretary of State for Transport has specific responsibility for noise control at Heathrow, Gatwick and Stansted airports. The specific noise limits are noted within the Gatwick Airport - London (Noise Abatement Requirements) Notice 2004 and are noted in the AIP. As an airport operator, Gatwick cannot arbitrarily restrict or forbid a slot-holding airline to operate solely dependent on noise levels (subject to the aircraft type not being banned from operating in the UK/EU).

It is appreciated that these noise limits are now rarely broken and as part of Action 25, Gatwick will engage with the DfT via the ANMAC committee to commence a review of departure noise limits.

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

Introduction of arrivals noise limits.
(This should be an issue for the Department for Transport to consider.)

GATWICK AIRPORT RESPONSE
During the 1990s the Government considered the feasibility of setting noise limits for arriving aircraft through its Aircraft Noise Monitoring Advisory Committee (ANMAC). ANMAC advises the Department for Transport on technical and policy aspects of aircraft noise mitigation and track-keeping policies at Heathrow, Gatwick and Stansted airports.

The work was published by the Department of the Environment, Transport and the Regions (DETR) in 1999, which concluded that it was impracticable to set approach noise limits similar to those for departing aircraft. The Government therefore decided against imposing operational noise limits for arrivals and in February 2000 announced that it would ask the aviation industry to develop a code of practice to promote the use of Continuous Descent Operations (CDO), which the report had identified as the primary means of reducing noise experienced on the ground.

Recently the CAA reviewed the Arrivals Noise Controls with the resulting analysis published within CAP 1554. The study noted that "due to the number of noise monitors required, effective noise monitoring of CDO performance prior to the capture of the glide path would not be practical. However, once aircraft have joined the final approach path, practical approach noise monitoring could be accomplished with a small and practical number of noise monitors, at distances between approximately 6 to 10 NM from landing threshold. Such monitoring would only measure the benefits of low power, low drag (LP/LD) procedures and not CDO.

When monitoring approach noise within 6 to 10 NM from landing threshold, there is limited scope for pilot discretion as the aircraft configuration will to a large extent be dictated by ATC speed control, making it difficult to subsequently attribute any noisier arrival to pilot, aircraft system or ATC action. A limit-based noise monitoring system, similar to that for departures, would therefore not be feasible."

Work to identify noise metrics and reporting to support the measurement of and track progress of, the NMB work plan and Noise Action Plan initiatives.
The Gatwick Airport Consultative committee acknowledges the concerns of local communities about the need for Gatwick Airport Ltd and the industry to address the impact of incremental traffic growth on the noise climate. To help give confidence to communities that GAL is actively and seriously addressing this concern and to pick up a new work stream of the NMB, the Committee suggests an additional action – new Action 31a. The inclusion of this action will bring into the END NAP process GAL's work to identify noise metrics and reporting which will enable the airport's growth and noise reduction performance to be more robustly measured and tracked.

GATWICK AIRPORT RESPONSE
Work to identify noise metrics and reporting was commenced by Gatwick as part of Activity 2 of the NMB 2017/2018 work plan, currently captured within Action 31 of this Action Plan.

As this study will require input from a wide range of stakeholders, the work stream has already been expanded to consider parties external to the NMB such as the Environmental Health Officers, GATCOM, NaTMAG, Gatwick Noise Monitoring Group as well as national bodies such as Sustainable Aviation and DfT ANMAC.

Due to the wider applicability of this work, it has been included as

ANNEX NINE A

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

a standalone action within the MONITORING AND REPORTING OUR PROGRESS section as Action 39a as follows "We will conduct a review of Government policy to identify new noise metrics and reporting to compliment the current noise contours and measure our noise performance."

Fining for lack of continuous descent approach on landing.
(The continuous descent approach is already a requirement contained within the Aeronautical Information Publication as regulated by the Department for Transport.)

GATWICK AIRPORT RESPONSE
CAP 1554, Review of Arrivals Noise Controls noted that "it is sometimes not possible to achieve a CDO due to a range of factors, including ATC instructions and information, airspace constraints, overriding safety requirements and weather. An analysis of CDO achievement rates over a period of several years may show seasonal peaks and troughs in performance.

In addition, when flying a CDO an aircraft may still require a short segment of level flight in order to reduce speed and/or to reconfigure. Thus without knowledge of the associated ATC voice instructions to flight crew (the monitoring of which would be impracticable), any instances of non-CDO could not automatically be attributed to the flight crew, making it difficult to apply financial or other penalties for not achieving a CDO."

Fining for breaches of any rule within the Aeronautical Information Publication.
(This should be an issue for the Department for Transport to consider.)

GATWICK AIRPORT RESPONSE
As noted above, due to a range of factors such as ATC instructions and information, airspace constraints, overriding safety requirements and weather it is it difficult to apply financial or other penalties for not achieving the rules within the AIP. Gatwick airport's FPT monitors adherence to the AIP rules and provides information to airlines when these are breached to support continual operational improvement.

Impose a significant reduction in night noise quotas.
(This should be an issue for the Department for Transport to consider.)

GATWICK AIRPORT RESPONSE
The Government published its decision on the next night flights regime for Gatwick in 2017 and this will be in place for the period October 2017 to October 2022. The movements limit remains unchanged however the night quota limit will be reduced as set out below.

During the summer season, the number of air traffic movements permitted during the night period is limited to 11,200 and 3,250 during summer and winter respectively. The night quota limits will be reduced to 5,150 in the summer (from 6,200) in 2018 and to 1,785 in the winter (from 2,000) in 2017/18. This will further incentivise the use of quieter aircraft by encouraging industry to plan its operations with sufficient headroom to ensure the limits can still be complied with in the event of unplanned disruption or changes to their schedules.

Ban the scheduling of QC/2 aircraft in the night period.
(This is a matter for the Department for Transport to consider.)

GATWICK AIRPORT RESPONSE
The Government published its decision on the next night flights regime for Gatwick in 2017 and this will be in place for the period

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

October 2017 to October 2022. Although a QC/2 ban was not subject to this consultation, proposals for a QC/4 ban were made to the DfT.

Introduce a voluntary ban on all QC4 aircraft during the Night Quota Period by 2019.

GATWICK AIRPORT RESPONSE
This request is captured by Action 9 of the proposed action plan, the date of this action was set at 2024 due to the necessary requirement for airline consultation. Concerns regarding the timescale of this action are appreciated and the end date has been adjusted to 2022.

Introduce a ban on scheduling QC4 aircraft during the night period (23:00-07:00) by 2024.

GATWICK AIRPORT RESPONSE
The Secretary of State for Transport has specific responsibility for noise control at Heathrow, Gatwick and Stansted airports and the London Heathrow, London Gatwick and London Stansted Airports Noise Restrictions Notice (No.2) 2017 note:

- QC4 aircraft may not be scheduled to take off or land during the night quota period.
- QC8 and 16 aircraft may not take off or land during the night period.

The Government published its decision on the next night flights regime for Gatwick in 2017 and this will be in place for the period October 2017 to October 2022. Proposals for a QC/4 ban were proposed to the DfT as part of this consultation.

GAL should commission and publish, at least annually, a detailed analysis of the health impacts of the airport's operations and the societal costs involved.
Over time these should identify trends and recommend actions to reduce health impacts.

GATWICK AIRPORT RESPONSE
These comments would be considered as part of the ongoing study to identify noise metrics and reporting as part of Activity 2 of the NMB 2017/2018 work plan to better measure noise performance. This task has been included as Action 39a as follows "We will conduct a review of Government policy to identify new noise metrics and reporting to compliment the current noise contours and measure our noise performance."

From the summer of 2020 no QC 2 flights can be scheduled during the period 23:30 to 06:30, and from 2023 no QC2 flights to be scheduled during the night period (23:00 to 07:00).
The purpose of the measure is to limit the use of the noisiest aircraft at night to minimise the number of people affected by sleep disturbance. This follows past practice at the airport of improving the night noise regime by first stopping the scheduling of a specific QC rated aircraft at night followed in the longer term by a ban on the use of such aircraft at night – as already proposed by the airport for QC4 aircraft.

GATWICK AIRPORT RESPONSE
The Secretary of State for Transport has specific responsibility for noise control at Heathrow, Gatwick and Stansted airports. The Government published its decision on the next night flights regime for Gatwick in 2017 and this will be in place for the period October 2017 to October 2022. Proposals for a QC/4 ban were proposed to the DfT as part of this consultation.

09

ANNEX NINE A

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

As there are only a few flights during the middle of the night, it is therefore now possible to introduce a no-flight period during the night (01:30-05:00) by 2024.

GATWICK AIRPORT RESPONSE
This request is captured by Action 9 of the proposed action plan.

Produce N60 contours for the night period (and 60 dB L_{ASmax} average contours for the most frequent aircraft types (5% or more of total movements) using Gatwick at night (23:00-07:00).
(Note: The 60 dB contour equates to an internal noise level of 45 dB L_{Amax} with the windows open, which is recognised as the level that will give rise to sleep disturbance. This action is to help inform the understanding of sleep disturbance on the residents surrounding Gatwick).

We will produce N60 contours for the night period (and 60dB L_{ASmax} average contours for the most frequent aircraft types (5% or more of total movements) using Gatwick at night (23:00-07:00).

Production of annual (Calendar year) N60 contours for the airport (standard modal split) for the night period (23:00 to 07:00).

Production of summer N60 contours for the airport (standard modal split) for the night period (23:00 to 07:00).
With these contour maps the airport should also tabulate each year the number of residential premises in each contour band, and after the initial year e.g. 2018 use the same residential data set (2018) for subsequent years, in addition to the residential data set for that calendar year e.g. 2020, so that the improvements in residents' noise exposure can be tracked. The purpose of calculating the figures on both the original and current residential data set applicable at that time is to allow for new developments that might take place in an area to be accounted for..

The reason for this measure being proposed is that one off noise events above an L_{Amax} of 60 dB outside (45dB L_{Amax} inside) will have a negative effect on sleep and health7 and thus the above contours will be a key indicator of the health impact on residents around the airport. From 2024 the airport may wish to consider N50 contours as well given emerging evidence of health effects at levels below 45 dB L_{Amax}.

The production of N60 night time contours is also in line with government guidance.

GATWICK AIRPORT RESPONSE
The above four proposals relate to noise contours published as Action 39. As part of Activity 2 of the NMB 2017/2018 work plan, work to identify noise metrics and reporting was commenced by Gatwick currently captured within Action 31.

Due to the wider applicability of this work, it has been included as a standalone action within the MONITORING AND REPORTING OUR PROGRESS section as Action 39a as follows "We will conduct a review of Government policy to identify new noise metrics and reporting to compliment the current noise contours and measure our noise performance." The proposals listed above will be included as part of this newly introduced Action.

A compensation payment to each residential household within the 57 dB L_{Aeq} 16h contour beginning in 2019 of £1000 per annum index linked to the retail prices index.
The airport clearly recognises the negative impact of aircraft noise on residents living within the 57 dB contour and above, given its proposals to compensate residents with £1000 per annum outlined in the letter from the company chairman to the prime minister in

FEEDBACK RECEIVED REGARDING THE PROPOSED LIST OF ACTION PLAN ACTIONS

DURING THE FIRST ROUND OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

June 2016.

In economic terms noise at Gatwick is an environmental externality and the above measure is intended to address this issue in the short term, while the longer term objective of the action plan under UK and EU law is achieved.

GATWICK AIRPORT RESPONSE
This refers to a commitment made by Gatwick Airport Ltd in 2014 where an initiative was introduced so that all households most affected by noise from a second runway at Gatwick would receive annual compensation equivalent to Band A Council Tax (currently £1000) if and when the second runway becomes operational.

As Gatwick Airport wasn't chosen as the site for an additional runway in the south-east, it is not appropriate to adopt this proposed Action Plan Action as there are there schemes currently in place, for example the Noise Insulation Scheme that offers up to £3,000 towards double glazing and loft insulation.

A new monitoring and enforcement regime should instead be proposed.
This should include provision that where a target is not achieved, or appears unlikely to be achieved, GAL should first prepare a remediation plan, if this does not promptly result in the achievement of the target GAL should report the failure to the DfT and/or DEFRA Secretary of State requesting direction on the actions it should take.

GATWICK AIRPORT RESPONSE
In accordance with the DEFRA guidance, the proposed actions within Gatwick's Noise Action plan have been assessed to determine their expected outcome and how this will be tracked. The Secretary of State for DEFRA, in liaison with the Department for Transport, will form a view regarding whether or not the submitted revised plan meets the requirements of the Regulations and, therefore, whether or not the plan is appropriate for adoption.

In terms of ongoing monitoring, the proposed actions within the Gatwick's noise action plan will be monitored in accordance with their proposed performance indicator and reporting process. In addition, the proposed actions in this noise action plan complement the Section 106 Legal Agreement with West Sussex County Council and Crawley Borough Council. As part the annual S106 monitoring process, Gatwick is subject to an independent review and audit of selected actions. The Final Annual Monitoring Report circulated to Crawley Borough Council and West Sussex County Council for circulation among the wider local authorities and the Gatwick Airport Consultative Committee. This report is published on the Airport website.

09

ANNEX NINE B

FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

As detailed at the commencement of the consultative process, feedback would be sought on the draft Noise Action Plan in its entirety. The date of 26 April 2018 was selected for the closure of this further state of consultation, this being the date of the full meeting of GATCOM.

In the previous round of consultation on the draft list of Action Plan Actions, comments were received from Crawley Borough Council, Horsham District Council, Reigate and Banstead Borough Council, Surrey County Council, West Sussex County Council, GATCOM and a joint letter was received from GACC and the Community Noise Groups of the Noise Management Board. Themes of all feedback received has been set out earlier in this section.

In accordance with the revised guidance from DEFRA to airport operators of February 2018, Gatwick Airport Ltd has considered the feedback provided and adapted its proposed actions accordingly. Key changes included:

- Updated structure of the draft actions table to include more information on the proposed action, costs/benefits, key stakeholders how it is to be tracked and reported and the proposed aim.
- Action 9, covering the voluntary operational ban on Q/C 4 aircraft in the night was brought forward to 2022. This date is now constrained by the required airline consultation process.
- Action 22 which covered a review of departure route limitations on Route 3 and 4 has been updated to cover all routes.
- Action 25 which covered departure noise limits, Gatwick continues to engage with the DfT on an ongoing study into departure noise limits. This study is expected to be completed in Summer 18. If required the DfT confirmed that they would consider a proposal at Gatwick to review these limits further.
- Action 39a has been introduced to capture a range of topics focusing on how noise metrics can be used to measure noise performance. It is a key action required to track the success of the draft NAP actions.
- Action 42, we are investigating options to introduce a complaints phone line by the end of 2018.

The full draft NAP including these changes was released to those organisations who provided comment on the draft list of Action Plan Actions in the first round of consultation and was also published on the Gatwick Airport noise website. Feedback was requested to be directed to the GATCOM members.

Feedback was duly received from the following organisations:

- GATCOM,
- The Community Noise Groups (CNGs) that sit on the Noise Management Board and the Gatwick Area Conservation Campaign.

The feedback received from these organisations is set out in full over the next pages.

FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

RESPONSE FROM THE GATWICK AIRPORT CONSULTATIVE COMMITTEE (GATCOM)

GATCOM
Gatwick Airport Consultative Committee

27 April 2018

Dear Lee,

GATWICK END NOISE ACTION PLAN 2019 - 2024

GATCOM welcomes the opportunity to help shape the reviewed draft END NAP and is confident that at the end of the consultation process involving GATCOM, the NMB community noise groups and Gatwick Local Authorities that GAL will have one of the most comprehensive and effective END NAPs in the country.

The END NAP is viewed as the overarching, statutory key driver for the airport to manage and mitigate the impact of aircraft noise around Gatwick bringing together the work of the various noise management groups and noise mitigation initiatives. It is important therefore that the NAP is seen as a "living document" and offers scope for regular review to reflect changing local circumstances. Having an effective and transparent monitoring and audit regime which helps ensure GAL remains on track to fulfil the various actions and commitments also needs to include a process to put in place remedial action when necessary, will give confidence to local communities impacted by aircraft overflight and noise that GAL is doing all that it can to mitigate the impacts and where possible seek an improvement in the noise climate.

Overall, GATCOM believes the draft reviewed END NAP gives a comprehensive account of the way in which GAL manages the noise climate, the legislative and regulatory framework within which GAL is required to operate, the proposed actions to be undertaken over the next five years and the schedule of consultation responses received. Many of the actions proposed in the draft NAP are supported and the revised format which introduces new additional columns against each action to address the requirements of DEFRA's guidance is welcomed. The inclusion of information on the estimated area/number of people to benefit from the action, the expected benefit and cost of the action and the other organisations to be involved in fulfilling the action will assist in the monitoring process.

GATCOM particularly supports GAL's work, being pursued through the NMB, to identify noise metrics and reporting to track traffic growth and the noise impact on local communities. It is noted that GATCOM previously suggested new actions 31a and 39a to capture the development of noise metrics and N60 contours for the night period, to be progressed as a priority in the early part of the plan period, have now been addressed through the bringing together of these actions into a standalone action – Action 39a - within the "monitoring and reporting our progress" section of the NAP.

ANNEX NINE B

FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

RESPONSE FROM THE GATWICK AIRPORT CONSULTATIVE COMMITTEE (GATCOM)
CONTINUED



However, GATCOM remains concerned about the lack of clear indicators or targets in the draft document. Some of the 'expected outcomes' from the additional KPIs set out in the draft document are already being achieved and as a result will just maintain the positive steps already being taken. The removal of all Chapter 3 aircraft is welcome as is the move to 80% Chapter14 aircraft. However the final outcome concerning the 48dB 6.5hr night contour being within 47km2 is confusing as in annex 6 (p.106) of the Action Plan there is reference to the Local Authority Planning Conditions, where it states:

"Limit the 6.5 hour, 48 dB(A) Leq contour (for the winter and summer seasons combined) to 47km² by 2011/2012. At Gatwick in 2011/2012 the 6.5 hour 48dBA Leq contour (for the winter and summer seasons combined) was 34.1 km2. In 2002-2003 it was 41.3 km2."

In addition the table in Figure 24 (p.106) shows that in Summer 2015 and Winter 2016 the combined 48dB Leq, 6.5hr contour area was 35.2 km2. As night noise is one of the major sources of annoyance for local communities GATCOM believes that GAL should be aiming to ensure this contour area remains the same at the very minimum as traffic grows and preferably be reduced over the next 5 years.

There is an overall lack of general overarching targets which is surprising given that some of the KPIs could be measured as there is existing data. However GAL needs to give a clearer commitment to actually measure any improvements and compare them to previous reports. For example, Action 10: Ground Noise - the indicator is unclear and "aim" is to maintain effective ground noise operational controls. The lack of clear indicators or targets could create difficulties for the auditors of the Noise Action Plan as there are no targets to be able to audit against. This will ultimately result in auditors confirming an action has been done but being unclear on any potential benefit. As it is important that the NAP outcomes are tangible and are able to be effectively assessed, GATCOM recommends that GAL reviews its "Aims" to make them "Targets" and introduces a few overarching targets which will help drive the behaviour to achieve those targets.

As regards the identification of actions to be progressed as a priority in the early part of the plan period, is it noted that GAL is open to discussion with GATCOM which actions are considered priorities for implementation and that this will form part of a subsequent discussion once the END NAP has been agreed by DEFRA. GATCOM wishes to pursue this point and whilst not wishing to circumvent the clear NMB role in helping to agree noise mitigation priorities as part of its work plan which is also captured by the NAP, it is felt that identifying some priorities in the NAP will help to build confidence and trust amongst communities that initiatives of importance are being treated as a priority by GAL. As a reminder GATCOM has suggested Actions 9, 25, 39 and 39a. Should this point not be accepted in the final version of the END NAP then GATCOM welcomes the opportunity for further discussions at the earliest possible time following DEFRA's approval of the plan.

FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

RESPONSE FROM THE GATWICK AIRPORT CONSULTATIVE COMMITTEE (GATCOM)
CONTINUED

GATCOM
Gatwick Airport Consultative Committee

As regards Action 9: Implementation of a voluntary ban on operations of QC4 aircraft within the core night period, and Action 25: Review of Departure Noise Limits, GAL's response to GATCOM's previous comments is noted. However, the Committee believes the GAL should do more to pursue these actions and believes that GAL should seek confirmation from the Secretary of State for Transport whether they can set their own limits over and above those by the Secretary of State. In respect of night flights generally, GATCOM would remind GAL that the Government's decision on the current night flights regime offered scope for airports to explore bespoke, airport-specific arrangements during the five year night flight regime should they wish to do so. GATCOM hopes therefore that this opportunity be further explored through the work of the NMB.

Finally, GATCOM has considered GAL's response to the Committee's comments on the specific actions. Set out in the table attached to this letter is GATCOM's response to how GAL has taken on board its comments. In some cases GATCOM has asked that GAL gives further consideration to the proposed action as part of this response to the consultation on the draft plan.

I trust GATCOM's comments set out in this letter and in the attached table can be taken into account in the final draft version of the plan.

Yours sincerely,

Paula Street
Assistant Secretary

09

ANNEX NINE B

FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

NMB COMMUNITY NOISE GROUPS' COMMENTS ON GAL'S PROPOSED 2019-2024 NOISE ACTION PLAN ACTIONS

The NMB Community Noise Groups and GACC submitted comments on GAL's draft Noise Action Plan (NAP) actions on 16 February 2018. Those comments, together with our previous NMB paper on Noise Action Plans, are attached as appendices to this document. Our NMB paper sets out our overall view on NAPs. This document sets out our joint comments on GAL's draft full Noise Action Plan V2.01.

Overarching comments

1. We support many of the actions proposed in the draft NAP. However, we continue to believe that the current NAP as a whole has not been effective, largely because it is based on inputs rather than measurable outcomes and because it takes no account of the significant growth that has occurred at Gatwick. CAA data shows that the noise environment around Gatwick has deteriorated every year since the current NAP came into effect.

2. The overall structure of GAL's 2019-2024 draft NAP, and the actions in it, are very similar to those in the current plan. Because Gatwick plans further growth in the 2019-2024 period it is likely that, if adopted and implemented, the draft plan would result in similar outcomes to the current plan. Specifically the noise environment around the airport would be likely to continue to deteriorate. We do not believe this is sustainable or consistent with the END' aims or the government's aviation noise policy objectives. We therefore continue to believe that there should therefore be a reappraisal of the format of Gatwick's NAP, the obligations it imposes on the airport and the wider industry and the consequences of failing to meet those obligations, on the basis set out in our previous comments.

3. None of the actions in the draft NAP meet the requirement in Defra's guidance to set out "the reduction of the number of people affected ... as a result of the measures in the Action Plan". In addition, in our view, few if any of the actions meet Defra's supplementary requirement (set out on page 95 of the draft NAP) that they should be "challenging" and only a handful are "quantified" in any form at all.

4. Numerous references in the introductory sections of the NAP (sections 2-7) are incorrect or out of date. In particular the SONA study findings and government's 2017 airspace policy decisions are not uniformly reflected. The document is wrong to claim that "in the last 15 years the number of people affected by noise within Gatwick's 57 decibel contour has fallen considerably …". The benefits and likely impact on noise of the NMB is overstated in these sections; this text should be toned down.

The proposed actions

5. Our analysis suggests that only nine of the 53 actions have direct potential to reduce noise. These are actions 1, 2, 3, 5, 9, 15, 17, 22, and 31. Five of those actions are repeated from or comparable to actions in the current NAP (1, 2, 3, 5 and 31), so their incremental impact is likely to be low. Two simply commit to implementing NMB solutions (17 and 31) but with no specificity on what those will be or the outcomes they will secure. One (22) seems likely to be technically very challenging.

6. Most of the other actions commit GAL to consultation, reporting, monitoring, mitigation measures or complying with the law, or will redistribute (rather than reduce) noise. We support most of these actions, but they will not in themselves reduce the airport's noise impacts.

FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

GAL's response to previous CNG and GACC comments

7. Very few of our previous comments have led to changes in the actions proposed by GAL. We draw particular attention to the following comments which we do not believe have been given the thorough consideration required by Defra:

ACTION / COMMENT NUMBER	PREVIOUS CNG COMMENT	CURRENT CNG VIEW
Comment 5, 9	The Noise Action Plan should commit to quantified noise impact outcomes	As discussed in 3 above the plan is not quantified in the manner required by Defra. GAL has suggested it is for Defra to consider whether it is adequate in this regard. In our view the current draft of the plan should not be adopted.
Action 5	The NAP should address the comments made by CNGs on the 2018/19 charges consultation	GAL has not responded to this.
Action 39a	-	This action should mirror the new priority workstream now agreed by the NMB, i.e. that the NMB will seek to develop and agree between industry and community representatives a set of metrics, processes and outcomes by which (1) the growth of the airport since 2013 and (2) its future growth are related to reductions in its noise impacts in a proportionate, fair and balanced manner. The current drafting of action 39a is unclear and too restrictive.
Action 40	GAL should prepare a remediation plan when noise contours show there has been an increase in noise.	GAL has dismissed this on the basis that it is a matter of government policy and not required by the END. In our view this misses the point: if noise is increasing the airport should be examining every option to reduce it; the process we have proposed would formalise that in a clear way and make the airport more accountable for its impacts. We would like GAL to reconsider this idea.
-	GAL should commission and publish, at least annually, a detailed analysis of the health impacts of the airports operations and the social costs involved.	GAL's response suggests that this will be addressed as part of its proposal to review noise metrics and reporting (number 39a). In our view these are entirely separate actions. We believe GAL should take greater responsibility for the health impacts of its operations and that the action we have proposed is a constructive way to commence that process. We would like GAL to reconsider this idea.

09

ANNEX NINE B

FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

PREVIOUS NMB COMMUNITY NOISE GROUPS' COMMENTS ON GAL'S PROPOSED 2019-2024 NOISE ACTION PLAN ACTIONS

Overarching comments

The NMB Community Noise Groups with GACC submitted a paper to NMB 9 on Noise Action Plans in general and GAL's current NAP and proposed 2019-2024 NAP actions in particular. That paper is attached as an appendix to these comments. It continues to represent our overall view on NAPs. Key points from the paper are:

1. The actions set out in Gatwick's current NAP have not achieved the END's aim of avoiding, preventing or reducing the impacts of noise. The current NAP has also failed to achieve the government's noise policy objectives, most specifically to "reduce and mitigate noise as airport capacity grows". And the overall objective of reducing noise set out in Theresa Villiers' 2010 letter to GACC has not been achieved.

2. The current NAP has therefore not been an effective policy instrument. We believe this is primarily because the NAP is based on inputs rather than outcomes and because it entirely ignores the significant growth that has occurred at Gatwick.

3. There is no reason to believe that a similarly structured set of noise actions for the 2019-24 period would be any more successful in achieving the END's aims and the government's policy objectives. Gatwick has announced plans to continue to grow in that period. In the absence of appropriate action by regulators to enforce the Directive and government policy, that is likely to mean that the noise environment around the airport will continue to worsen, as it has done over the current NAP period.

4. There should therefore be a reappraisal of the format of Gatwick's NAP, the obligations it imposes on the airport and the wider industry and the consequences of failing to meet those obligations. We do not believe that GAL's current NAP or the actions proposed in its draft 2019-2024 NAP are fit for purpose.

5. A new approach should be applied in developing and approving the 2019-2024 NAP, based on the following core principles:

   I. **The NAP should commit to noise impact outcomes.** It should specify clear, binding, noise impact reductions[2] together with the time profile for achieving those reductions. The targets should be set based on the government's core policy principles of balance, benefit sharing and noise impact reduction. In our view, therefore, Gatwick's NAP should commit to noise impact reductions equivalent to or greater than the growth projected by the airport in the NAP period together with a further factor reflecting the growth enjoyed by the industry from 2013-2018 the benefits of which have not been shared with impacted communities. Alongside those noise outcomes Gatwick should set out the actions it intends to take to achieve them, but the risk that those actions fail to achieve the outcomes should be borne by the airport and the wider industry not by communities.

   II. **The NAP noise reduction targets should be independently monitored and enforced.** If the targets were not achieved, or appeared unlikely to be achieved, DEFRA's Secretary of State should intervene and require the airport to take measures, including limiting its growth, so as to achieve them.

FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

6. The government should not approve any NAP that fails to reflect these or comparable principles.

Points 5 (I) and (ii) above should be regarded as specific comments on GAL's draft 2019-2024 NAP Actions.

We note that DEFRA has subsequently written to all relevant airport operators including GAL making clear, amongst other things, that their plans should include "estimates in terms of the reduction of the number of people affected (annoyed, sleep disturbed, or other)… as a result of [the measures in] their Action Plan" including evidence that the measures are challenging, objective, quantified (where reasonably practicable), subject to specific timescales, and have taken full account of the views of local communities. We believe this is consistent with our point 5 (I) above. DEFRA have also emphasised that the issues raised by consultees are demonstrably given thorough consideration by airport operators and that they will be looking for evidence of how airports have ensured this is the case in their submitted Plans.

[2] Noise impact reductions should be measured on a basis to be agreed with community groups and representatives. They should include components for both average noise levels and the frequency of noise events at a wide range of locations both close to the airport and further away under flight paths. Metrics should reflect principles of fair and equitable dispersal to ensure noise impact reductions are not achieved by concentrating noise in areas of low population density.

09

ANNEX NINE B

FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

PAPER BY THE GATWICK NOISE MANAGEMENT BOARD COMMUNITY NOISE GROUPS WITH THE GATWICK AREA CONSERVATION CAMPAIGN REGARDING ENVIRONMENTAL NOISE REGULATIONS 2006: NOISE ACTION PLANS

Purpose of Environmental Noise Directive and Noise Action Plans

The aim of the Environmental Noise Directive (END) is to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise.

Noise Action Plans (NAPs) are intended to prevent and reduce environmental noise where necessary and particularly where exposure levels can induce harmful effects on human health and to preserve environmental noise quality where it is good.

Action Plans are required to identify whether there are any particular or additional measures that might be taken to meet these policies, including noise reduction if necessary.

Current and historic UK policy context

The UK policy context for Gatwick's 2019-2024 Noise Action Plan (NAP) is the government's current policy on aviation noise. This is:

> *"to limit and, where possible, reduce the number of people in the UK significantly affected by aircraft noise as part of a policy of sharing benefits of noise reduction with industry in support of sustainable development".*[3]

This policy is open to multiple interpretations. The core policy principles seem to be:

1. *Limiting and where possible reducing the number of people significantly impacted by aircraft noise.* Although unclear this appears to rule out increases in the number of people significantly impacted.

2. *Sharing of benefits.* This concept is expressed in a range of ways in different government documents. The current airspace policy document (quoted above) talks about sharing benefits of noise reduction. The Aviation Strategy Call for Evidence talks about sharing the benefits of growth and a greater sense of fairness. In any event the principle appears to be that if the industry benefits so should impacted communities. We take community "benefit" in this context to mean absolute reductions in noise impacts, on a basis to be agreed with impacted communities.

3. *Balance.* The executive summary of the government's most recent aircraft noise policy document talks about striking a balance between the economic and social benefits of the industry and its local impacts. Balance is also a core principle in the government's Air Navigation Guidance 2017 issued to the CAA. The plain English meaning of balance is "a situation in which different elements are equal or in the correct proportions". In the context of aircraft noise we take this to mean that an airport should only be permitted to grow if it reduces its noise impacts. The 2013 Aviation Policy Framework confirms that interpretation (see below).

4. *Sustainable development.* This is not defined, but the Aviation Strategy Call for Evidence talks about supporting growth where environmental impacts can be managed and exploiting all opportunities to reduce the industry's environmental impact. It

[3] Consultation Response on UK Airspace Policy: A framework for balanced decisions on the design and use of airspace. October 2017

FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

also raises the idea of targets for noise reduction.

The policy context for the current (2013-2018) NAP is clearer as regards the balance between growth and noise. The overall policy objective when the NAP was approved was to *"limit and where possible reduce the number of people in the UK significantly affected by aircraft noise"*. The policy went on to say *"future growth in aviation should ensure that benefits are shared between the aviation industry and local communities ... This means that the industry should reduce and mitigate noise as airport capacity grows ".*[4]

More broadly it has been UK government policy for many years that the effect of NAPs should be to *reduce* noise impacts. In a letter to GACC dated 27 May 2010 the Aviation Minister Theresa Villiers said *"The noise action plans will make a key contribution to helping to reduce the local noise impacts for residents. … Can I assure you that these plans are currently being submitted to rigorous scrutiny to ensure that they do meet the underlying aim of the EU Directive namely avoiding, preventing or reducing the harmful effects due to exposure to environmental noise?"*

The success or otherwise of the current NAP should be judged principally by the extent to which it has achieved the END's aims and facilitated achievement of the government's historic aircraft noise policies as set out above. If those aims and policies have not been achieved it follows, in our view, that there should be changes in any or all of: the basis on which NAPs are prepared; the actions that individual airports commit to taking; and the way those actions are enforced.

We note that DEFRA's July 2017 guidance on airport NAPs proposes no substantive changes to the previous round of noise mapping and action planning carried out in 2012 and proposes a relatively light touch "review and revise" updating process. This does not, however, stop individual airports from undertaking a more detailed review and update should they wish.

Assessment of Gatwick's 2013-2018 NAP

Since the 2013-2018 NAP was published CAA and Gatwick data shows that:

- the number of air traffic movements at Gatwick has grown every year, by over 12% in total;
- the number of passengers using Gatwick has grown every year, by 22% in total;
- the number of people within the 57 dB(A) day contour[5] has increased every year, by over 27% in total;
- the area covered by the 57 dB(A) day contour has increased every year, by over 8% in total; and
- night flight impacts have also increased as set out in the government's 2017 night flight consultation.

It is clear that the END's aim of avoiding, preventing or reducing the impacts of noise has not been achieved in the current NAP period.

Assessing the above data against the current core UK policy principles set out above we reach the following conclusions:

1. *Limiting and where possible reducing the number of people significantly impacted by aircraft noise.* This has not been achieved. The number of people significantly affected, measured using the government's preferred metric, has increased substantially. Alternative metrics that more accurately reflect the effects of aircraft noise would be likely

[5] Whilst we do not believe the 57 dBA contour is an appropriate measure of the impact of aviation noise on communities, it is the only long-term data set that we are aware of. More realistic data that also took account of the number of flights, a key factor for communities, would certainly show greater increases in noise impacts over the same period.

ANNEX NINE B

FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

to show greater increases in impacts. The number of noise-related complaints for example has risen very substantially since 2013.

2. *Sharing of benefits.* This has not been achieved. Gatwick and its industry partners have enjoyed very substantial benefits from the growth of the past four years. But those benefits are not being shared. Noise impacts have increased year-on-year and continue to increase as flights numbers and the average size of aircraft using Gatwick grow.

3. *Balance.* This has not been achieved. There is no credible basis on which it could be argued that the data above represents a balanced outcome as between the interests of the industry and those of impacted communities.

4. *Sustainable development.* This is an insufficiently clear policy to allow an objective assessment to be made, but it has almost certainly not been achieved.

In addition the 2013 APF policy objective to "reduce and mitigate noise as airport capacity grows" has not been achieved in any year since 2013. And the overall objective of reducing noise set out in Theresa Villiers' 2010 letter has not been achieved.

In summary the actions set out in Gatwick's current NAP have not achieved the END's aims or the government's noise policy objectives. The current NAP has therefore not been an effective policy instrument. We believe this is primarily because the NAP is based on inputs rather than outcomes and because it entirely ignores the significant growth that has occurred at Gatwick.

Proposals

There is no reason to believe that a similarly structured set of noise actions for the 2019-24 period would be any more successful in achieving the END's aims and the government's policy objectives. Gatwick has announced plans to continue to grow in that period. In the absence of appropriate action by regulators to enforce the Directive and government policy, that is likely to mean that the noise environment around the airport will continue to worsen, as it has done over the past NAP period.

Our view therefore is that there should be a reappraisal of the format of Gatwick's NAP, the obligations it imposes on the airport and the wider industry and the consequences of failing to meet those obligations. We do not believe that GAL's current NAP or the actions proposed in its draft 2019-2024 NAP are fit for purpose.

We propose a new approach should be applied in developing and approving the 2019-2024 NAP. This should be based on the following core principles:

I. **The NAP should commit to noise impact outcomes.** It should specify clear, binding, noise impact reductions together with the time profile for achieving those reductions[6]. The targets should be set based on the government's core policy principles of balance, benefit sharing and noise impact reduction. In our view, therefore, Gatwick's NAP should commit to noise impact reductions equivalent to or greater than the growth projected by the airport in the NAP period together with a further factor reflecting the growth enjoyed by the industry from 2013-2018 the benefits of which have not been shared with impacted communities. Alongside those noise outcomes Gatwick should

[6] Noise impact reductions should be measured on a basis to be agreed with community groups and representatives. They should include components for both average noise levels and the frequency of noise events at a wide range of locations both close to the airport and further away under flight paths. Metrics should reflect principles of fair and equitable dispersal to ensure noise impact reductions are not achieved by concentrating noise in areas of low population density

FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

set out the actions it intends to take to achieve them, but the risk that those actions fail to achieve the outcomes should be borne by the airport and the wider industry not by communities.

II. **The NAP noise reduction targets should be independently monitored and enforced.** If the targets were not achieved, or appeared unlikely to be achieved, DEFRA's Secretary of State should intervene and require the airport to take measures, including limiting its growth, so as to achieve them.

We will have detailed comments on the draft list of actions provided by GAL in due course. But we believe that an appropriate set of NAP foundations and principles, which hold the airport properly to account for its noise impacts in accordance with government policy, must be established first.

We do not believe that the government should approve any NAP that fails to reflect these or comparable principles.

09

ANNEX NINE B

FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

GATCOM'S RESPONSE IN RESPECT OF SPECIFIC ACTIONS

GATCOM
Gatwick Airport Consultative Committee

	ACTION	GATCOM COMMENT	GAL RESPONSE	GATCOM RESPONSE TO GAL'S RESPONSE
1	We will maintain a charging differential in our published airport charges which incentivises the use of aircraft with the best in class noise performance.	Publishing the track fleet mix would allow year on year comparison. Could use on index which uses the QC system to calculate average for summer/winter.	Included under Performance Indicator and Reporting: **Indicator: Fleet mix including % of Chapters 4 and 14 Aircraft. Reported: Quarterly to NaTMAG.** Included under 'AIM': **By 2024, 90% of movements are by Chapter 14 aircraft.**	Accept
3	We will review the landing fee differential at least every five years.	Or in response to a change of circumstances (i.e. FOPP)	No amendment made to action.	Recommends that the wording of the action be amended to include reference to our previous comments. It is important to ensure that the NAP remains a "living" document and is adaptable to changing circumstances

FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

GATCOM'S RESPONSE IN RESPECT OF SPECIFIC ACTIONS
CONTINUED

GATCOM
Gatwick Airport Consultative Committee

	ACTION	GATCOM COMMENT	GAL RESPONSE	GATCOM RESPONSE TO GAL'S RESPONSE
8	We will, as far as is practicable, take all necessary steps to manage the late running of aircraft to prevent scheduled day movements taking place during the sensitive night period.	Yes but also suggest include reference to reporting to FLOPSC	Indicator amended to read: **Indicator: The number of off-schedule flights which are delayed into the night period. Reported: Airside operations and airlines.**	Accept
9	We will implement a voluntary ban on operations of Quota Count 4 aircraft within the core night period by the end of 2024.	This should be brought forward to 2019. Alternatively introduce a charging differential (like FOPP) where there is a significantly increased charge from 2019 on QC4s at night.	Action changed: **We will implement a voluntary ban on operations of Quota Count 4 aircraft within the core night period by the end of 2022.**	Accept. GATCOM recommends that this Action be identified as a priority early in the Plan period - see also comments in covering letter
24	We will continue to fine aircraft in breach of the Department for Transport departure noise limits with all such monies passed to the Gatwick Airport Community Trust	With modern aircraft there is no excuse exceeding the departure limits. A review of the fines should be carried out and they should be set at a level that would far exceed any benefit that maybe gained from exceeding the noise limits.	No amendment made to Action.	See comments under Action 25

ANNEX NINE B

FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

GATCOM'S RESPONSE IN RESPECT OF SPECIFIC ACTIONS
CONTINUED

Gatwick Airport Consultative Committee

	ACTION	GATCOM COMMENT	GAL RESPONSE	GATCOM RESPONSE TO GAL'S RESPONSE
25	We will engage with the Department for Transport and the Aircraft Noise Management Advisory Committee to review departure noise limits at Gatwick Airport.	GAL could introduce its own lower limits if the DfT will not support a change. Also suggest that the target date is brought forward to 2020.	No amendment made to Action.	Recommend that GAL seeks confirmation from the Secretary of State for Transport whether they can set their own limits over and above those by the Secretary of State. See also the comments in the covering letter. GATCOM also recommends that this action is treated as a priority by GAL.
29	We will continue to offer acoustic insulation to noise sensitive buildings within the 63LAeq,16hr Summer noise contour.	2014 scheme expanded to include the 60dB LAeq16hr.	Action amended to read: **We will continue to offer acoustic insulation to noise sensitive buildings within the 60LAeq noise contour.**	Accept

FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

GATCOM'S RESPONSE IN RESPECT OF SPECIFIC ACTIONS
CONTINUED

GATCOM
Gatwick Airport Consultative Committee

	ACTION	GATCOM COMMENT	GAL RESPONSE	GATCOM RESPONSE TO GAL'S RESPONSE
30	To address the impacts of future growth we will continue to offer to purchase those properties suffering from both a high level of noise (63dB LAeq,16hr or more) and a large increase in noise (3dB LAeq or more), in accordance with the Terms of Reference of the Property Market Support Bond and Home Owners Support Scheme.	There are no proposed changes to NPRs with LAMP2, however if there is no other option available and a new NPR is introduced and new people are overflown then a lower figure should be considered.	No amendment made to Action.	Noted. Given the concerns subsequently expressed by a community group about the potential blight arising from changes to airspace, GATCOM no longer wishes to pursue its previous comments.
31	In conjunction with the Noise Management Board we will explore innovative methods to reduce both inbound and outbound aircraft noise levels.	Yes but also include reference to publishing the annual report of the NMB which will list the successes of work programme.	Performance Indicator Amended. **Indicator: Implementation progress reports.** **Reported: to each NMB meeting with public reports published annually.**	Accept. GATCOM also recommends that as part of this action options to provide respite for those communities under multiple use flight paths, particularly for areas where aircraft are generally lower than 4000ft.

ANNEX NINE B

FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

GATCOM'S RESPONSE IN RESPECT OF SPECIFIC ACTIONS
CONTINUED

Gatwick Airport Consultative Committee

ACTION	GATCOM COMMENT	GAL RESPONSE	GATCOM RESPONSE TO GAL'S RESPONSE
31a	Action recommended by GATCOM: Work to identify noise metrics and reporting to support the measurement of, and track the progress of, the NMB work plan and Noise Action Plan initiatives.	New action not included:	See comments in covering letter.

FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

GATCOM'S RESPONSE IN RESPECT OF SPECIFIC ACTIONS
CONTINUED

GATCOM
Gatwick Airport Consultative Committee

	ACTION	GATCOM COMMENT	GAL RESPONSE	GATCOM RESPONSE TO GAL'S RESPONSE
39	We will update to our website the following noise contours: • Summer 16 hour day forecast LAeq contours for air noise • Night forecast contours for ground noise • Forecast Lden contours for air noise • Night quota period 48dB LAeq contour (07:00-23:00) • Summer Leq contours	The Night contours should be for the whole night period (23:00-07:00) rather than the Quota Period (23:30-06:00). 'Summer Leq contours' are a repeat of the Summer 16hr Leq contours above	Action amended to read: **We will update to our website the following noise contours:** **• Summer 16 hour day Leq (actual)** **• Summer 16 hour day (standard) Leq** **• Summer Night Leq (actual)** **• The above compared to the previous year.** **• Summer Night 10 year average modal split Leq**	The production of N60 night contours around Gatwick Airport has been identified as an important tool by the Local Authority Environmental Health Practitioners to help identify those most affected by night noise and also to assist the Local Authorities to control and ensure adequate mitigation for housing developments within their Authorities. At the recent NMB workshop on noise contours and metrics it was identified by attendees that there was a need for supplementary noise metrics, N60 contours being one of those metrics identified. Recommend that GAL address this point in the final NAP and that it be treated as a priority.

ANNEX NINE B

FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

GATCOM'S RESPONSE IN RESPECT OF SPECIFIC ACTIONS
CONTINUED

Gatwick Airport Consultative Committee

	ACTION	GATCOM COMMENT	GAL RESPONSE	GATCOM RESPONSE TO GAL'S RESPONSE
39a		Action recommended by GATCOM: We will produce updated N60 contours for the night period (and 60dB LASmax average contours for the most frequent aircraft types (5% or more of total movements) using Gatwick at night (23:00-07:00).	New Action partially included **We will conduct a review of Government policy to identify new noise metrics and reporting to compliment the current noise contours and measure our noise performance.**	Accept but see comments in covering letter about the need for general overarching targets and the need for this to be a priority item.
42	We will continue to offer various methods for complaints about aircraft noise events.	Following many complaints it has been agreed to re-instate a phone service for noise complaints. Reference to which should be included in this condition.	Recommendation included in 'AIM': **Implementation of a complaints phone line by the end of 2018.**	Accept

FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

GATWICK AIRPORT LTD RESPONSE TO THE FEEDBACK RECEIVED AND ISSUES RAISED DURING THE SECOND ROUND OF CONSULTATION

Gatwick Airport Ltd welcomes the feedback provided and appreciates the comments made by GATCOM which *"is confident at the end of the consultation process involving GACOM, the NMB community noise groups and Gatwick Local Authorities that GAL will have one of the most comprehensive and effective NAP in the country".*

The END NAP will be the overarching statutory driver for noise management and mitigation around the airport and GAL confirms its ambitions for the END NAP to be a 'living document' involving tracking, regular review and update. The first stage in this process is achieving additional clarity on the aims and commitments to further our work to manage aviation noise, a central theme of the feedback. To meet this GAL has added several actions to the END NAP and in particular, expanded the scope of Action 39a. The revised scope aims to identify new noise metrics and reporting to complement the current noise contours and measure our future noise performance. These metrics could then be used to more precisely describe the aims and outcomes of the actions within this END NAP.

The identification of new noise metrics and reporting will be based upon a review of government policy and its implementation. Through this process we aim to reach a measure of consensus with community groups on future airport utilisation relative to noise impacts. Another output from the feedback.

We appreciate that a key piece of feedback regarded the use of the word 'aims' or 'targets' with regard to our actions. We note that the END Regulations and DEFRA guidance confirms that no binding targets are required and no penalties are to be imposed furthermore the Regulations and the DEFRA Guidance use the term 'aim' and hence our decision to remain with the term 'aim'.

Due to the importance of Action 39a GAL has designated this as a priority action and GAL confirms that we will discuss the priority of the remaining actions once the END NAP has been accepted by DEFRA.

To support the measurement of our ongoing and planned noise management programs listed within the END NAP; GAL has committed to expanding its community noise monitoring program by procuring and deploying additional noise monitoring terminals. This will provide a vital asset to both understanding the current noise climate whilst measuring the benefits delivered by the END NAP actions and those undertaken by the Noise Management Board via Action 47.

To continue to drive continuous improvement, as part of Action 25, GAL was to explore options to reduce its departure noise limits with the DfT. Following the feedback provided, GAL can confirm that the DfT has confirmed that GAL can explore options to reduce these limits beyond the current set DfT levels and corresponding Action has been updated. To confirm our commitment to improving our noise management we have also introduced Action 24a which aims to increase the fines that are levied against airlines that breach departure noise limits, be these the current or revised limits when they are introduced.

In summary, the following actions have been updated within the draft END NAP in response to the feedback provided:

- **Action 2a** introduced to capture additional aircraft or manufacture specific noise defects which can be rectified

ANNEX NINE B

FEEDBACK RECEIVED REGARDING THE INITIAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE SECOND STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

by a modification are identified (similar to the FOPP) we will seek to identify, consult and implement corresponding charging penalties. This aims to provide the living document approach which is adaptable based upon changing demands in the future.

- **Action 25** covered a review of the departure noise limits and has been updated to reference both engagement with the DfT and unilateral action following confirmation from the DfT that this approach may be possible given a suitable evidence base.

- The review of noise limits in action 25 is complimented by Action 24a which targeted increasing the fines that are levied against airlines that breach the departure noise limits.

- **Action 28a** was introduced to confirm that GAL will undertake a review of its acoustic noise insulation programs by the end of 2019. With subsequent reviews considered every 5 years as noted in Action 28.

- **Action 37a** aims to expand the community noise monitoring scheme by deploying additional noise terminals. This is part of GAL's commitment to understand the noise impacts around the airport whilst identifying and measuring the potential benefits delivered by the actions in this END NAP.

- As previously discussed, **Action 39a** has been expanded to aim to reach a measure of consensus with community groups on future airport utilisation relative to noise impacts. Based upon a review of Government policy including how Government policy should be interpreted and how that policy has been applied in practice, we will aim to develop new noise metrics and reporting to complement the current noise contours and measure our future noise performance. This work will be used to more precisely describe outcomes to support this END Noise Action Plan. Although not specifically mentioned, this Action will consider the use of N-above metrics and their potential inclusion in the annual noise contour reports.

- In addition to the expanded noise monitoring scheme, **Action 49** has been updated to include the production of local and holistic noise reports.

FEEDBACK RECEIVED REGARDING THE FINAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE THIRD STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

CONTENT OF THE PAPER ISSUED BY GATWICK AIRPORT LTD TO THE GATCOM STEERING GROUP MEETING HELD ON 21 JUNE 2018

Introduction to the Final Draft END NAP

Background

It was agreed at the meeting of GATCOM on 26 April 2018 that the final draft Noise Action Plan, having been updated in response to the feedback received, be presented to the 21 June 2018 meeting of the GATCOM Steering Group for consideration prior to it being presented for a final time to the full meeting of GATCOM, scheduled for 19 July 2018. The effect of this additional stage of consultation is that there has been three stages of consultation; commencing with the circulation of a proposed list of Action Plan Actions, the circulation of an initial draft Noise Action Plan and culminating in the final draft of the Noise Action Plan being presented.

Feedback received and the changes made

In the previous round of consultation the full draft Action Plan was released to those organisations who provided comment with feedback received from:

- GATCOM,
- The Community Noise Groups (CNGs) that sit on the Noise Management Board and the Gatwick Area Conservation Campaign.

The feedback provided by these parties is included in full, within Annex 9B of the final draft Noise Action Plan.

Gatwick Airport Ltd welcomes and appreciates the feedback provided and as taken this on-board in the development of its final draft. A key theme of the feedback was a desire to identify new noise metrics and more precisely describe the aims, targets and outcomes of the actions. In response, GAL has added several actions as outlined below and in particular has:

- Expanded the scope of Action 39a, to aim to identify new noise metrics and reporting to complement the current noise contours and measure our future noise performance. These metrics could then be used to more precisely describe the aims, targets and outcomes of the actions within the END NAP. The identification of new noise metrics and reporting will be based upon a review of government policy and its implementation. Through this process we aim to reach a measure of consensus with community groups on future airport utilisation relative to noise impacts. Another key output from the feedback.

- Re-affirmed its ambition for the Noise Action Plan to be a 'living document' involving tracking, regular informal review and update. The first stage of this approach will be incorporation of the findings of Action 39a. Due to the importance of this work, GAL has designated this as a priority action. GAL confirms that we will discuss the priority of the remaining actions once the Action Plan has been accepted by DEFRA.

To support the measurement of our ongoing and planned noise management programs listed within the END NAP; GAL has committed to expanding its community noise monitoring program by procuring and deploying additional noise monitoring terminals. This will provide a vital asset to both understanding the current noise climate whilst measuring the benefits delivered by the Noise Action Plan can be measured and assessed.

To continue to drive continuous improvement, as part of Action 25, GAL was to explore options to reduce its departure noise limits with the DfT. Following the feedback, GAL notes that the DfT has

ANNEX NINE C

FEEDBACK RECEIVED REGARDING THE FINAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE THIRD STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

confirmed that GAL can explore options to reduce these limits beyond the currently set levels and the corresponding action has been updated.

To confirm our commitment to improving our noise management we have also introduced Action 24a which aims to increase the fines that are levied against airlines that breach departure noise limits, be these the current or revised limits when they are introduced.

In response to feedback and to build upon the success delivered by the A320 fuel over pressure port (FOPP) retrofit. GAL has added Action 2a to identify, consult and implement corresponding charging penalties for any additional aircraft or manufacture specific noise defects which can be rectified by a modification. Finally, GAL has introduced Action 28a to confirm that the airport will undertake a review of its acoustic noise insulation programs by the end of 2019. With subsequent reviews considered every 5 years as noted in Action 28.

Through the feedback provided and the corresponding adaptation to the Noise Action Plan, GAL believes the final draft of the Noise Action Plan provides a comprehensive and effective overarching statutory driver for noise management and mitigation around the airport.

Next steps

The final draft END NAP will be presented to the 21 June 2018 meeting of the GATCOM Steering Group for consideration prior to it being presented for a final time to the full meeting of GATCOM, scheduled for 19 July 2018.

Should the final draft be accepted by GATCOM, regulations require that it be sent to the Secretary of State for DEFRA for formal "adoption". The Secretary of State for DEFRA, in liaison with the Department for Transport, will form a view regarding whether or not the submitted revised plan meets the requirements of the Regulations and, therefore, whether or not the plan is appropriate for adoption.

- If the Secretary of State for DEFRA considers that the requirements set out in the Regulations are met, they will notify the airport accordingly that the Action Plan has been adopted. The Action Plan should then be published by the Airport Operator as a public document in an electronic format within 28 days.

- If the requirements set out in the Regulations are not met, the airport operator will be required to make the necessary changes to the plan. Following revision, the revised plan will need to be resubmitted to the Secretary of State for DEFRA by an agreed date for further consideration.

FEEDBACK RECEIVED REGARDING THE FINAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE THIRD STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

REPORT FROM THE SECRETARIAT AND TECHNICAL ADVISIOR OF THE GATWICK AIRPORT CONSULTATIVE COMMITTEE TO THE MEETING OF THE COMMITTEE HELD ON 19 JULY 2018

GATCOM
Gatwick Airport Consultative Committee

SUMMARY
Following GATCOM's consideration at the last meeting of Gatwick Airport Limited's (GAL) draft reviewed Environmental Noise Directive (END) Noise Action Plan (NAP), GAL has considered all the responses received to its consultation and has now produced a final version of the END NAP. The way in which GAL has taken into account GATCOM's comments was considered by the GATCOM Steering Group at its meeting on 21 June. This report sets out the views and recommendations of the Steering Group (see section 3), the on-going concerns of the NMB community noise groups (see section 4) and sets out a final GATCOM response in Appendix 2 for approval.

1. OVERVIEW

1.1 At the last meeting, the Committee's response to GAL's draft reviewed END NAP was agreed. In summary the key points of GATCOM's response was as follows:

- Overall, the draft reviewed END NAP gives a comprehensive account of the way in which GAL manages the noise climate, the legislative and regulatory framework within which GAL is required to operate, the proposed actions to be undertaken over the next five years and the schedule of consultation responses received at the time of publishing the draft document.

- Many of the actions proposed in the draft NAP are supported and the revised format which introduces new additional columns giving information on the estimated area/number of people to benefit from the action, the expected benefit and cost of the action and the other organisations to be involved in fulfilling the action is welcomed as it will assist in the monitoring process.

- Whilst a number of GATCOM's comments on GAL's proposed list of actions had been taken into account, GAL had not committed to specifying targets to be achieved and that some actions lacked clear indicators. GAL has been asked to review its "Aims" to make them "Targets".

- Whilst not wishing to circumvent the clear NMB role in helping to agree noise mitigation priorities as part of its work plan which is also captured by the NAP, GAL has been asked to identify some priority actions that would bring benefits to the noise climate early in the plan period. This will help to build confidence and trust amongst communities that initiatives of importance are being treated as a priority by GAL. As a reminder GATCOM has suggested Actions 9, 25, 39 and 39a.

ANNEX NINE C

FEEDBACK RECEIVED REGARDING THE FINAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE THIRD STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

REPORT FROM THE SECRETARIAT AND TECHNICAL ADVISIOR OF THE GATWICK AIRPORT CONSULTATIVE COMMITTEE TO THE MEETING OF THE COMMITTEE HELD ON 19 JULY 2018
CONTINUED

Gatwick Airport Consultative Committee

- GAL should do more to pursue Action 9: Implementation of a voluntary ban on operations of QC4 aircraft within the core night period, and Action 25: Review of Departure Noise Limits.

1.2 GATCOM also asked to see the Final Draft END NAP document before it being submitted to Defra for approval.

1.3 GAL has now produced the Final Draft END NAP which was considered by the GATCOM Steering Group at its meeting on 21 June together with GAL's covering report, which is attached at Appendix 1 for consideration. GATCOM is asked to consider and agree its final response to GAL.

2. FINAL DRAFT END NAP

2.1 A copy of the Final Draft END NAP together with the Annexes and GAL's covering report was circulated to all members and supporting officers on 29 June for consideration in advance of the GATCOM meeting.

2.2 The final version of the END NAP has now been split into 2 parts – part 1 is the main document and action plan – part 2 contains all the annexes. It is a comprehensive plan which sets out the overarching approach to noise management at Gatwick and the KPIs to be met on a variety of performance standards.

2.3 GAL's paper attached at Appendix 1 addresses the way in which it has taken account of the feedback received to the consultation on the reviewed draft END NAP. In particular, GAL has advised that:

- Defra's guidance does not require targets to be set as part of the action plan process.
- It has reaffirmed its ambition for the END NAP to be a "living document" involving tracking, regular informal review and update.
- It has expanded the scope of Action 39a relating to the identification of new noise metrics and reporting (a key priority of the Noise Management Board (NMB)).
- A greater commitment has been given under Action 25 to explore options to reduce noise limits beyond those currently set by the DfT.

- A commitment has been given in Action 24a to increase the fines for breaches in departure noise limits.
- A new commitment to implement corresponding charging penalties for any additional aircraft or manufacture noise defects which can be rectified by modification is given in Action 2a.
- A commitment in Action 28a has been given to undertake a review of the noise insulation program by the end of 2019.

3. GATCOM STEERING GROUP'S COMMENTS

3.1 The further refinements to a number of the actions have been welcomed by the GATCOM Steering Group. They address more specifically aircraft noise and disturbance through a variety of management and mitigation techniques, all of which enhance the comprehensiveness of the END NAP. However a key matter on which the Steering Group and GAL have not been able to reach agreement is on having specific targets to support the delivery of the actions in the END NAP. GAL still refers to "aims".

3.2 GAL has stated in its paper at Appendix 1 that the Defra guidance confirms that no binding targets are required and no penalties are to be imposed. GAL has also stated:

> "Expanded the scope of Action 39a, to aim to identify new noise metrics and reporting to complement the current noise contours and measure our future noise performance. These metrics could then be used to more precisely describe the aims, targets and outcomes of the actions within the END NAP. The identification of new noise metrics and reporting will be based upon a review of government policy and its implementation. Through this process we aim to reach a measure of consensus with community groups on future airport utilisation relative to noise impacts. Another key output from the feedback."

3.3 In addition to this GAL has re-affirmed its ambition for the Noise Action Plan to be a 'living document' involving tracking, regular informal review and update. The first stage of this approach will be incorporation of the findings of Action 39a and GAL has designated this as a priority action.

3.4 As regards GATCOM wish to see priority given to certain actions, GAL has confirmed that this will be the subject of discussion once the END

FEEDBACK RECEIVED REGARDING THE FINAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE THIRD STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

NAP has been accepted by DEFRA.

3.5 Whilst the Steering Group welcomed GAL's approached in respect of the priority to be given to Action 39a and the scope to use the outcome of that work to describe the aims, targets and outcomes of the actions in the END NAP, it was disappointed that GAL had not taken the opportunity to set an overarching target in the END NAP against which the overall noise performance could be meaningfully monitored and tracked. It is acknowledged that neither the Environmental Noise (England) Regulations 2006 or Defra's Guidance refer to the setting of targets and that both documents only refer to the term "aim" (they are silent on the use of the term "target"), the Steering Group felt that in order to give greater confidence to local communities impacted by aircraft overflight and noise that GAL is serious about containing the noise environment as traffic at the airport grows, the setting of an overarching target in the statutory END NAP was something that GAL should embrace. The Steering Group therefore recommends that this matter be raised in GATCOM's response to GAL.

3.6 The suggested draft GATCOM response is set out in Appendix 2 for consideration and approval.

3.7 The Steering Group was also of the view that the Government needed to have a greater oversight of the airport's noise performance generally to ensure that airports were managing the noise climate in accordance with the Government's policy objectives. It is therefore suggested that GATCOM raises this point with the Government and to seek clarification on how it intends to monitor the implementation and effectiveness of the Gatwick NAP to ensure it delivers the aims of Government policy.

4. NMB COMMUNITY NOISE GROUPS VIEW

4.1 As GATCOM is aware, the views of the NMB Community Noise Groups and Gatwick Area Conservation Campaign have been reported to GATCOM both at the time of considering the proposed draft list of actions (January 2018) and the reviewed Draft END NAP (April 2018). The NMB Community Noise Groups are still of the view that GAL's Final Draft END NAP is not compliant with Defra's guidance. They also believe that GAL's undertaking to develop new noise metrics and reporting (in Action 39a) is inadequate and cannot be relied on given GAL had previously committed to developing such metrics by 2011.

4.2 This view was again expressed at the recent meeting of the NMB held on 27 June which they wished to bring to the attention of GATCOM. The Committee is therefore asked to take their views into consideration in agreeing its final response to GAL.

FEEDBACK RECEIVED REGARDING THE FINAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE THIRD STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

REPORT FROM THE SECRETARIAT AND TECHNICAL ADVISIOR OF THE GATWICK AIRPORT CONSULTATIVE COMMITTEE TO THE MEETING OF THE COMMITTEE HELD ON 19 JULY 2018
CONTINUED

GATCOM
Gatwick Airport Consultative Committee

RECOMMENDED

(1) that the suggested draft response to GAL's Final Draft END NAP as set out in Appendix 2 be approved; and

(2) that GATCOM writes to Defra and the DfT to highlight the need for a greater oversight of the airport's noise performance generally to ensure that the airport was managing the noise climate in accordance with the Government's policy objectives.

PAULA STREET
Secretariat

ANNEX NINE C

FEEDBACK RECEIVED REGARDING THE FINAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE THIRD STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

GATCOM RESPONSE TO FINAL DRAFT END NOISE ACTION PLAN

GATCOM
Gatwick Airport Consultative Committee

24 July 2018

Dear Lee,

FINAL DRAFT: GATWICK END NOISE ACTION PLAN 2019 - 2024
Firstly, thank you for giving GATCOM a further opportunity to review the Final Draft of the END Noise Action Plan (NAP). The Committee is pleased to note that many changes have been made to the Final Draft NAP including further refinement to a number of the actions reflecting the feedback GAL has received from its consultation with GATCOM and other key interested parties.

As part of its consideration of the Final Draft END NAP, GATCOM has again been informed of the on-going concerns of some community noise groups represented on Gatwick's Noise Management Board and that their view is that the reviewed plan does not adhere to Defra's guidance and is not fit for purpose. GATCOM does not share this view and overall the Committee believes the Final Draft END NAP provides a comprehensive plan setting out the overarching approach to noise management at Gatwick and the KPIs to be met on a variety of performance standards.

GATCOM is also pleased that GAL has added new actions in response to feedback received and has particularly welcomed the expanded scope of Action 39a relating to the identification of new noise metrics and reporting. GAL's work on developing new noise metrics is viewed as a high priority by GATCOM given the importance of establishing measures to track more meaningfully airport growth against the impact this has on the noise climate around Gatwick.

GATCOM supports the "living document" approach which echoes the Government's previous advice to airport consultative committees on the purpose of the END NAP and is pleased that it is GAL's intention to use the outcomes from its metrics work to assist in describing more precisely the aims, targets and outcomes of the actions within the END NAP.

However, an area on which GATCOM has not been able to reach agreement with GAL is on the need for the statutory END NAP to set an overarching target against which the airport's overall performance in maintaining, and where possible, achieving a reduction in the noise climate can be monitored and measured. GATCOM believes that in order to give greater confidence to local communities impacted by aircraft overflight and noise that GAL is serious about containing the noise environment as traffic at the airport grows, the setting of an overarching target in the statutory END NAP is something that GAL should embrace.

GATCOM acknowledges that the use of the term "aim" is used widely throughout the NAP and whilst it is noted that this term is consistent

FEEDBACK RECEIVED REGARDING THE FINAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE THIRD STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

GATCOM RESPONSE TO FINAL DRAFT END NOISE ACTION PLAN
CONTINUED

GATCOM
Gatwick Airport Consultative Committee

with both the Environmental Noise (England) Regulations 2006 and Defra's Guidance (which only stipulate the need for new noise abatement objectives with the aim of providing further management of the noise impact), does not easily lend itself to be monitored and measured in the same way as a target.

As "critical friend" to the airport, GATCOM therefore recommends that GAL reviews whether an overarching target can be included in the END NAP which would also align with the aim set out in Action 39(a) in the development of new noise metrics and which can then be informally reviewed through the "living document" approach. Should GAL agree to such an approach GATCOM would expect to be consulted on any such informal review alongside community noise groups.

Finally, GATCOM also has concerns about how the Government intends to monitor the success of the END NAP to ensure that the airport is delivering the Government's noise management policies and objectives. This is a matter that the Committee will pursue with the DfT and Defra direct.

I trust our comments can be taken into account in the Final END NAP submission to Defra.

Yours sincerely,

Paula Street
Assistant Secretary

09

ANNEX NINE C

FEEDBACK RECEIVED REGARDING THE FINAL VERSION OF THE DRAFT NOISE ACTION PLAN

DURING THE THIRD STAGE OF ENGAGEMENT, INCLUDING THE GATWICK AIRPORT LTD RESPONSE

GATWICK AIRPORT LTD RESPONSE

Although GATCOM's comments on "aims" and "targets" are appreciated, GAL would like to re-iterate its desire to identify new noise metrics and more precisely describe the aims, targets and outcomes of the actions contained in the END NAP. We plan to do this using our "living document" approach which involves tracking, regular informal review and update. The first stage of this process is the integration of the currently ongoing growth and noise work captured by Action 39a which has been designated as a priority. This work will also aim to reach a measure of consensus with community groups on future airport utilisation relative to noise impacts, providing a first step towards the setting of overarching targets as requested by GATCOM. These adaptations will be tracked through the regular reporting of the END NAP on an annual basis.

In addition, we have noted our willingness to discuss priority actions with GATCOM once the END NAP has been agreed with DEFRA, at this time we can seek to prioritise actions 9, 25, 39 and, where possible, accelerate the implementation of these. Action 39a is already designated as a priority.

As an airport we operate within Government policy. Issues that arise from differing viewpoints on the interpretation of this policy create issues for all and as a result we welcome GATCOM's proposals to write the DEFRA and the DfT regarding the ongoing monitoring of the END NAP. GAL would like to extend an offer to work with and support GATCOM, the DfT and DEFRA in this piece of work.





Figure 34: Estimated Total Number of People and Dwellings above Various Noise Levels, L_{den}

NOISE LEVEL (DB)	NUMBER OF DWELLINGS 2016	NUMBER OF PEOPLE 2016	NUMBER OF DWELLINGS 2011	NUMBER OF PEOPLE 2011	NUMBER OF DWELLINGS 2006	NUMBER OF PEOPLE 2006
≥ 55	5,450	13,500	4,500	11,300	4,700	11,900
≥ 60	950	2,300	850	2,000	1,300	3,200
≥ 65	250	600	200	500	250	600
≥ 70	<50	<100	<50	<100	50	100
≥ 75	0	0	0	0	0	0

Figure 35: Estimated Total Number of People and Dwellings above Various Noise Levels, L_{day}

NOISE LEVEL (DB)	NUMBER OF DWELLINGS 2016	NUMBER OF PEOPLE 2016	NUMBER OF DWELLINGS 2011	NUMBER OF PEOPLE 2011	NUMBER OF DWELLINGS 2006	NUMBER OF PEOPLE 2006
≥ 54	4,000	9,800	3,550	8,700	4,100	10,300
≥ 57	1,350	3,200	1,200	2,800	1,850	4,400
≥ 60	550	1,400	500	1,200	500	1,300
≥ 63	250	600	200	500	250	600
≥ 66	50	200	100	200	150	300
≥ 69	<50	<100	<50	<100	<50	<100
≥ 72	-	-	-	-	0	0
≥ 75	-	-	-	-	0	0

ANNEX TEN

THE RESULTS OF PREVIOUS NOISE MAPPING

Figure 36: Estimated Total Number of People and Dwellings above Various Noise Levels, $L_{evening}$

NOISE LEVEL (DB)	NUMBER OF DWELLINGS 2016	NUMBER OF PEOPLE 2016	NUMBER OF DWELLINGS 2011	NUMBER OF PEOPLE 2011	NUMBER OF DWELLINGS 2006	NUMBER OF PEOPLE 2006
≥ 54	3,300	8,000	2,600	6,400	2,550	6,200
≥ 57	900	2,100	750	1,800	750	1,900
≥ 60	450	1,000	300	700	350	800
≥ 63	150	400	150	400	150	400
≥ 66	<50	100	<50	100	<50	100
≥ 69	0	0	0	0	<50	<100
≥ 72	-	-	-	-	0	0
≥ 75	-	-	-	-	0	0

Figure 37: Estimated Total Number of People and Dwellings above Noise Levels, $L_{Aeq, 16hday}$

NOISE LEVEL (DB)	NUMBER OF DWELLINGS 2016	NUMBER OF PEOPLE 2016	NUMBER OF DWELLINGS 2011	NUMBER OF PEOPLE 2011	NUMBER OF DWELLINGS 2006	NUMBER OF PEOPLE 2006
≥ 54	3,850	9,400	3,300	8,100	3,550	8,900
≥ 57	1,200	2,900	1,050	2,500	1,550	3,700
≥ 60	550	1,300	450	1,100	450	1,200
≥ 63	200	600	200	500	200	600
≥ 66	50	200	50	200	100	300
≥ 69	<50	<100	<50	<100	<50	<100
≥ 72	-	-	-	-	0	0
≥ 75	-	-	-	-	0	0

Figure 38: Estimated Total Number of People and Dwellings above Various Noise Levels, L_{night}

NOISE LEVEL (DB)	NUMBER OF DWELLINGS 2016	NUMBER OF PEOPLE 2016	NUMBER OF DWELLINGS 2011	NUMBER OF PEOPLE 2011	NUMBER OF DWELLINGS 2006	NUMBER OF PEOPLE 2006
≥ 48	3,650	9,000	2,950	7,200	3,000	7,500
≥ 51	1,150	2,800	1,250	2,900	1,500	3,700
≥ 54	500	1,100	450	1,00	450	1,100
≥ 57	200	500	200	500	200	500
≥ 60	50	200	100	200	100	300
≥ 63	<50	<100	<50	<100	<50	<100
≥ 66	0	0	0	0	0	0
≥ 66	-	-	-	-	0	0

11

ANNEX ELEVEN

SUMMARY PERFORMANCE REPORT OF THE PREVIOUS NOISE ACTION PLAN

Progress against the 62 Action Plan Action in the previous version of the Environmental Noise Directive Noise Action Plan is reported on a quarterly basis to the meetings of the Noise and Track Monitoring Advisory Group. An annual report is also prepared, published online and presented to the Gatwick Airport Consultative Committee. The layout of the quarterly and annual reports list the Action Plan Action, in the order it is listed in the original Environmental Noise Directive Noise Action Plan, followed by a **Red** / **Amber** / **Green** status, an update on the previous reporting period and a plan for the upcoming period.

AS OF JANUARY 2018:
Four Action Plan Actions were identified as RED - Not on track. The rationale behind the rating is in italics beneath each Action Plan Action

30. We will continue to offer a range of contact options for complaints and enquires regarding aircraft noise including by post, email, lo-call voicemail facility and online on the noise website.

GATWICK AIRPORT COMMENT
As recommended by the Independent Review of Arrivals, all complaints are registered online through 'Casper' or by freepost.

37. By the end of 2011 we will review, develop and consult on alternative metrics for describing the impact of aircraft operations during the course of this action plan. We will work and liaise with other UK airports and the Department for Transport on the revised metrics whilst seeking review by Aircraft Noise Monitoring Advisory Committee (UK) ANMAC.

GATWICK AIRPORT COMMENT
As the issue of noise metrics is now being discussed at Government level, at a subgroup of Aircraft Noise Management Advisory Committee (ANMAC), we will continue to play an active role in the Aircraft Noise Management Advisory Committee sub-group (once resumed) as this, and other matters are progressed.

39. We will conduct customer service surveys for the FPT every three years commencing in 2010.

GATWICK AIRPORT COMMENT
This Action Plan Action has been placed on hold indefinitely due to the changes made to complaints handling arising from the Independent Review of Arrivals and the introduction of the Noise Management Board.

53. We will benchmark internationally and publish our ranking in aircraft noise communications with other comparable airports in 2010 and 2013.

GATWICK AIRPORT COMMENT
This Action Plan Action has been placed on hold indefinitely due to the changes made to how Gatwick communicates noise and airspace issues arising from the Independent Review of Arrivals and subsequent activities of the Noise Management Board.

Three Action Plan Actions have been identified as AMBER – Neither on track nor not on track.

19. d) Gatwick Airport Ltd will write to the Department for Transport requesting research be undertaken to fully understand the effects of aircraft noise on human health.

GATWICK AIRPORT COMMENT
The airport is awaiting the outcomes of the World Health Organisation Report on the effects of noise on human health prior

SUMMARY PERFORMANCE REPORT OF THE PREVIOUS NOISE ACTION PLAN

to taking any further action regarding this issue.

44. We will publish on our website the night quota period 48dB (A) Leq contour.

GATWICK AIRPORT COMMENT
The annual 2016 noise contours were commissioned by the airport and calculated by the Civil Aviation Authority Environmental Research and Consultancy Department. The airport is in receipt of these and they will be published on the website in February 2018.

45. We will publish annually on our website the summer Leq contours as produced by the Department for Transport.

GATWICK AIRPORT COMMENT
The annual 2016 noise contours were commissioned by the airport and calculated by the Civil Aviation Authority Environmental Research and Consultancy Department. The airport is in receipt of these and they will be published on the website in February 2018.

The remaining fifty-three Action Plan Actions were all found to be GREEN – on track.

FURTHER INFORMATION
To access further information regarding Gatwick Airport's noise reporting, please visit
https://www.gatwickairport.com/business-community/aircraft-noise-airspace/noise-reports/fpt-reports/
on these webpages you can view:

- Minutes from the Noise and Track Monitoring Advisory Group
- END Noise Action Plan Annual Report
- Verification of 'Casper' – the Gatwick Airport Noise and Track Keeping system
- Community Noise Studies – as part of Gatwick's Community Noise Monitoring Programme
- Flight Performance Team Annual and Quarterly Reports

The interactive 'Casper' Noise Lab can be found at:
http://noiselab.casper.aero/lgw/

On our **Sustainability** Pages at
https://www.gatwickairport.com/business-community/community-sustainability/sustainability/
you can view:

- Section 106 Annual Monitoring Reports
- Section 106 / Decade of Change Management Action Plans
- Decade of Change Reports

On our **Noise Management Board** webpages at
https://www.gatwickairport.com/business-community/aircraft-noise-airspace/noise-management-board/
there is a substantial amount of information relating the Independent Review of Arrivals, the Noise Management Board and minutes of meetings, meeting papers and details of studies and analysis undertaken.

12 | ANNEX TWELVE
COMPARISON OF OLD AND NEW ACTION PLAN ACTIONS



In revising this Noise Action Plan, Gatwick Airport Ltd has decided to undertake a full refresh of the Action Plan Actions therein to ensure they remain relevant as the airport grows.

This table fulfils Gatwick's obligation to publish details of removed, retained, amended and new Action Plan Actions. The left hand column contains all of the previous Noise Action Plan Actions and the right the retained, amended or new Action Plan Actions.

- 26 previous Action Plan Action have been removed.
- The 8 retained Action Plan Actions are in **black**.
- The 18 amended Action Plan Actions are in **blue**.
- The 32 new Action Plan Actions are in **green**

COMPARISON OF OLD AND NEW ACTION PLAN ACTIONS

Figure 39: Comparison of old and new Action Plan Actions

OLD ACTION PLAN ACTION	NEW ACTION PLAN ACTION
1. We will develop and consult with airlines on policy prioritising airlines operating Chapter 4 aircraft, or equivalent when introducing new business to Gatwick with the aim of increasing the percentage of Chapter 4 or equivalent aircraft operating at Gatwick to 83% by 2015.	1. We will maintain a charging differential in our published airport charges which incentivises the use of aircraft with the best in class noise performance.
2. We will consult with our airline partners on the voluntary phase out of Chapter 3 high aircraft in favour of Chapter 4 or equivalent at Gatwick.	4. Gatwick Airport Ltd will consult with its airline partners annually regarding the Airport Charges Structure. The Noise Management Board will also be asked for its feedback.
3. We will review the landing fee differential at least every five years commencing in 2010. From 2015 onwards this will be with due regard to CAP 119.	3. We will review the landing fee differential at least every five years.
4. In conjunction with our airline partners we will seek to introduce a 'fly quiet and clean' programme. This will rank our airline partners in relation to their overall performance for noise and emissions impacts using metrics such as compliance with abatement techniques, fleet age, engine fit and passenger loads per km. critical to this programme will be the continued delivery of high CDA performance through partnership work with airlines.	5. In conjunction with our airline partners we will seek to re-introduce, by the end of this Noise action Plan period a programme that will rank our airline partners in relation to their overall performance for a range of noise and emissions impacts potentially including, but not limited to metrics such as compliance with abatement techniques, fleet age, engine fit and passenger loads per km.
4. a) Gatwick Airport Ltd will write to its largest fleet operators of A320 family aircraft seeking their intentions to retrofit A320 family aircraft with vortex generators to eliminate noise created by air passing over the Fuel Tank Pressure Equalisation Vents.	2. We will continue to apply and report upon charging penalties to those aircraft operators of Airbus A320 family aircraft that have not had the Fuel Over Pressure Protector (FOPP) modification retrofitted.
5. We will continue to promote adherence to the Arrivals Code of Practice and in particular the achievement of Continuous Descent Operations through forums such as the Flight Operations Performance and Safety Committee, the Gatwick Airport Pilots Forum, Sustainable Aviation and other communication events.	13. We will continue to promote adherence to the Arrivals Code of Practice through groups such as Flight Operations Performance and Safety Committee (FLOPSC), Sustainable Aviation and other engagement events.

12

ANNEX TWELVE

COMPARISON OF OLD AND NEW ACTION PLAN ACTIONS

OLD ACTION PLAN ACTION	NEW ACTION PLAN ACTION
6. We will continue to promote, monitor, seek to improve and report on adherence to the departure noise abatement procedures detailed in the Gatwick Aeronautical Information Publication. The detail of this is described within the main body of this (END Noise Action Plan) document.	19. We will continue to promote, monitor, seek to improve and report on adherence to the departure noise abatement procedures detailed in the London Gatwick Aeronautical Information Publication.
7. We will continue to promote, monitor, seek to improve and report on adherence to the arrival noise abatement procedures detailed in the Gatwick Aeronautical Information Publication. See section six (of the END Noise Action Plan).	14. We will continue to promote, monitor, seek to improve and report on adherence to the arrival noise abatement procedures detailed in the London Gatwick Aeronautical Information Publication.
8. We will continue to administer the Department for Transport night restrictions regime and ensure that the number of operations at night is within the limits prescribed. We will also be actively involved in the Government night noise consultation in 2010.	6. We will continue to administer the Department for Transport night flight regime and ensure that we operate at night within the prescribed ATM and QC limits.
9. We will continue to monitor adherence to and review the effectiveness of our ground noise operational controls.	10. We will continue to monitor adherence to and review the effectiveness of our ground noise operational controls.
10. In conjunction with our partners in Sustainable Aviation we will continue to lobby for and seek to support continual improvements in technology and operations towards the ACARE goal of 50% reduction in perceived external noise by 2020 based on new aircraft of 2020 relative to equivalent new aircraft in 2000.	**ACTION REMOVED AS GATWICK AIRPORT LTD REMAINS A COUNCIL MEMBER OF SUSTAINABLE AVIATION AND WILL CONTINUE TO WORK WITH THE ALLIANCE THROUGH THE VARIOUS WORKING GROUPS TO ACHIEVE THIS COLLECTIVE OBJECTIVE.**
11. We will continue to fine aircraft in breach of the Department for Transport departure noise limits, and we will seek to increase the fining levels with the aim of penalising repeat offenders or departure noise infringements in 2010 and review levels every five years.	24. We will continue to fine aircraft in breach of the Department for Transport departure noise limits with all such monies passed to the Gatwick Airport Community Trust.

COMPARISON OF OLD AND NEW ACTION PLAN ACTIONS

OLD ACTION PLAN ACTION	NEW ACTION PLAN ACTION
12. We will work with our partners in Sustainable Aviation to develop and promote low noise flight procedures through evaluation of future operational methods and implementation of best practice, e g, evaluating the feasibility of introducing a steeper approach as part of an international initiative. Gatwick Airport will implement any recommendations resulting from feasibility studies in conjunction with the Civil Aviation Authority and the Department for Transport as and when they are released.	**ACTION REMOVED AS GATWICK AIRPORT LTD REMAINS A COUNCIL MEMBER OF SUSTAINABLE AVIATION AND WILL CONTINUE TO WORK WITH THE ALLIANCE THROUGH THE VARIOUS WORKING GROUPS TO ACHIEVE THIS COLLECTIVE OBJECTIVE.** **THE FUTURE WORKPLAN OF THE NOISE MANAGEMENT BOARD, AGREED ANNUALLY, MAY CONSIDER FEASIBILITY STUDIES WITH THE INTENTION OF INTRODUCING LOW NOISE FLIGHT METHODS. ANY SUCH ACTIVITIES WOULD BE SHARED WITH SUSTAINABLE AVIATION, AS APPROPRIATE.**
13. In conjunction with our airline partners and NATS (air navigation services provider) we will undertake a review in 2010 of our stand planning procedures to identify any opportunities to prioritise stand allocation so as to minimise ground noise impacts.	**ACTION REMOVED – THIS WORK IS UNDERTAKEN BY GATWICK AIRPORT LTD AS PART OF ITS 'BUSINESS AS USUAL' ACTIVITIES TO ENSURE MAXIMUM UTILISATION OF AVAILABLE RESOURCES WHILE ENSURING THAT GROUND NOISE IMPACTS ARE NOT ADVERSELY AFFECTED.**
14. We will make a financial contribution towards the acoustic insulation all eligible properties within the boundary of our new residential noise insulation scheme. This is scheduled for launch in January 2014 and benefits from a larger scheme boundary than in previous schemes.	28. We will continue a scheme that helps with the cost of acoustically insulting homes against the effects of aircraft noise. We undertake to review the scheme every 5 years to ensure it remains appropriate and relevant.
15. We will request that the Department for Transport review and explore in conjunction with Gatwick Airport the possibility of updating the current departure noise limits.	25. Through engagement with the Department for Transport, Aircraft Noise Management Advisory Committee and/or through unilateral action review our departure noise limits.
16. We will continue to offer households subject to high levels of noise (69dB(A) Leq or more) assistance with the costs of relocating.	30. To address the impacts of future growth we will continue to offer to purchase those properties suffering from both a high level of noise (63dB(A) Leq or more) and a large increase in noise (3dB(A) Leq or more), In accordance with the Terms of Reference of the Property Market Support Bond and Home Owners Support Scheme.

12

ANNEX TWELVE

COMPARISON OF OLD AND NEW ACTION PLAN ACTIONS

OLD ACTION PLAN ACTION	NEW ACTION PLAN ACTION
17. We will request that the Department for Transport review and explore in conjunction with Gatwick Airport the possibility of updating the current night departure noise limits.	**ACTION REMOVED – THIS HAS BEEN SUPERSEDED BY THE AMENDED ACTION 25** *"We will engage with the Department for Transport and the Aircraft Noise Management Advisory Committee to review departure noise limits at Gatwick Airport."*
18. We will continue to offer acoustic insulation to other noise sensitive buildings such as schools and hospitals, exposed to medium to high levels of noise (63dB(A) Leq or more).	29. We will continue to offer acoustic insulation to noise sensitive buildings within the 60LAeq noise contour.
19. We will request that the Department for Transport review current airspace utilisation around Gatwick.	52. We will participate in all activities relating to 'LAMP 2' – the redesign of the London Terminal Manoeuvring Area (LTMA) and en-route airspace to eliminate chokepoints, alleviate areas of intensive aircraft concentrations, and to create a structure that has capacity to accommodate forecast traffic levels beyond 2040.
19. a) We will explore the feasibility of providing 'rotating respite' to those communities affected by noise from arriving aircraft.	**ACTION REMOVED – REFER TO ACTION 31.** *"In conjunction with the Noise Management Board we will explore innovative methods to reduce both inbound and outbound aircraft noise levels."*
19. b) In conjunction with the London Airspace Management Programme we will explore innovative new methods to control both inbound and outbound aircraft to strive for operational best practice with a view to minimising their impact on the communities below.	31. In conjunction with the Noise Management Board we will explore innovative methods to reduce both inbound and outbound aircraft noise levels.
19. c) We will consult appropriately in respect of actions 19a and19b.	53. Ensure that local communities are informed about LAMP 2 plans and the progress and airport plans for the integration of Gatwick specific departure and arrival procedures.

COMPARISON OF OLD AND NEW ACTION PLAN ACTIONS

OLD ACTION PLAN ACTION	NEW ACTION PLAN ACTION
19. d) Gatwick Airport Ltd will write to the Department for Transport requesting research be undertaken to fully understand the effects of aircraft noise on human health.	**ACTION REMOVED AS GATWICK AIRPORT LTD IS AWARE, THROUGH SUSTAINABLE AVIATION THAT THE WORLD HEATH ORGANSIATION IS UNDERTAKING A STUDY THAT WILL DETAIL, AMONG OTHER MATTERS, THE EFFECTS OF AIRCRAFT NOISE ON HUMAN HEALTH.**
20. To address the impacts of future growth we will continue to offer acoustic insulation to any residential property which suffers from a medium to high level of noise (66dB(A) Leq or more) and a large increase in noise (3dB(A) Leq or more).	**ACTION REMOVED – REFER TO ACTIONS 28 AND 30.** Action 28: *"We will continue a scheme that helps with the cost of acoustically insulting homes against the effects of aircraft noise. We undertake to review the scheme every 5 years to ensure it remains appropriate and relevant."* Action 30: *"To address the impacts of future growth we will continue to offer to purchase those properties suffering from both a high level of noise (63dB(A) Leq or more) and a large increase in noise (3dB(A) Leq or more), In accordance with the Terms of Reference of the Property Market Support Bond and Home Owners Support Scheme."*
21. To address the impacts of future growth we will continue to offer to purchase those properties suffering from both a high level of noise (63dB(A) Leq or more) and a large increase in noise (3dB(A) Leq or more), In accordance with the Terms of Reference of the property market support bond and home owners support scheme.	**ACTION REMOVED – REFER TO ACTION 30.** *"To address the impacts of future growth we will continue to offer to purchase those properties suffering from both a high level of noise (63dB(A) Leq or more) and a large increase in noise (3dB(A) Leq or more), In accordance with the Terms of Reference of the Property Market Support Bond and Home Owners Support Scheme."*
22. We will undertake and publish a feasibility study to assess the potential economic and environmental costs and benefits of operating a runway preference by the end of 2010.	**ACTION REMOVED – REFER TO ACTION 31.** *"In conjunction with the Noise Management Board we will explore innovative methods to reduce both inbound and outbound aircraft noise levels."*

12

ANNEX TWELVE

COMPARISON OF OLD AND NEW ACTION PLAN ACTIONS

OLD ACTION PLAN ACTION	NEW ACTION PLAN ACTION
23. We will continue to engage with our aviation partners through the Flight Operations Performance and Safety Committee to seek to improve adherence to the Aeronautical Information Publication.	18. We will continue to promote adherence to the Departures Code of Practice through groups such as FLOPSC, Sustainable Aviation and other communication events.
24. We will develop a strategy to minimise Auxiliary Power Unit use in order to reduce ground noise and local air quality emissions, and replace with and roll out through 2010. Impacts will be reviewed on an annual basis.	12. We will continue to minimise aircraft auxiliary power unit use in order to reduce ground noise and local air quality emissions via Gatwick Airport Directives and monitoring of compliance.
25. We will publish each quarter on our website the level of adherence with the noise abatement procedures in the Gatwick Aeronautical Information Publication.	38. We will report progress against the published Noise Abatement Procedures contained within the London Gatwick Aeronautical information Publication and this Noise Action Plan on a quarterly basis to the Noise and Track Monitoring Advisory Group, the Gatwick Airport Consultative Committee and on our webpages.
26. We will continue to keep abreast of government research and guidance in relation to issues of tranquillity and overflight of Areas of Outstanding Natural Beauty (AONB).	**ACTION REMOVED – AONB GUIDANCE CONTINUALLY MONITORED AS PART OF THE AIRPORT'S 'BUSINESS AS USUAL' ACTIVITIES. THE LATEST GUIDANCE IS LISTED WITHIN THE 2017 AIR NAVIGATION GUIDANCE.**
27. We will continue to engage with local community representatives on air noise through appropriate consultation groups, such as the Gatwick Airport Consultative Committee, Noise and Track Monitoring Advisory Group and the Flight Operations Performance and Safety Committee.	46. We will continue to engage with local communities through the established noise governance groups.
28. We will report on the progress of the (Environmental Noise Directive) action plan to the Noise and Track Monitoring Advisory Group as a standing agenda item.	**ACTION REMOVED – REFER TO ACTION 38.** *"We will report progress against the published Noise Abatement Procedures contained within the London Gatwick Aeronautical information Publication and this Noise Action Plan on a quarterly basis to the Noise and Track Monitoring Advisory Group, the Gatwick Airport Consultative Committee and on our webpages."*

COMPARISON OF OLD AND NEW ACTION PLAN ACTIONS

OLD ACTION PLAN ACTION	NEW ACTION PLAN ACTION
29. We will continue to engage with the Gatwick Airport Consultative Committee on noise management providing quarterly reports of performance and the work of the Flight Performance Team, Noise and Track Monitoring Advisory Group and the Flight Operations Performance and Safety Committee.	**ACTION REMOVED – REFER TO ACTION 38.** *"We will report progress against the published Noise Abatement Procedures contained within the London Gatwick Aeronautical information Publication and this Noise Action Plan on a quarterly basis to the Noise and Track Monitoring Advisory Group, the Gatwick Airport Consultative Committee and on our webpages."*
30. We will continue to offer a range of contact options for complaints and enquires regarding aircraft noise including by post, email, lo-call voicemail facility and online on the noise website.	42. We will continue to offer various methods for complaints about aircraft noise events.
31. We will continue to provide public access to flight track information (delayed by 20 minutes) via the online flight tracking facility.	33. We will continue to provide public access to flight track information and noise related data via the Gatwick Airport noise website and the online flight tracking facility, available both on desktop and mobile devices.
32. We will continue to provide a Flight Performance Team service and implement service improvements where identified. The Flight Performance Team will continue to provide accurate and timely data to aid strategy development and noise complaint handling.	34. We will continue to provide a Flight Performance Team (FPT) service and implement service improvements where identified. The FPT will continue to provide accurate and timely data to aid strategy development and noise complaint handling.
33. We will continue to log all complaints relating to aircraft operations and publish the statistics on our website quarterly.	41. We will continue to log all complaints relating to aircraft operations in line with the extant Noise Complaints Handling Policy and publish the statistics on our website quarterly.
34. We will seek to respond to at least 95% of all complaints and enquiries within eight working days of receipt and publish our performance in Flight Performance Team quarterly reports.	40. We will seek to respond to at least 95% of all complaints and enquiries within eight working days of receipt, in line with the extant Complaints Handling Policy, and publish our performance in FPT quarterly reports.

12

ANNEX TWELVE

COMPARISON OF OLD AND NEW ACTION PLAN ACTIONS

OLD ACTION PLAN ACTION	NEW ACTION PLAN ACTION
35. Through our work with the Noise and Track Monitoring Advisory Group and the Gatwick Noise Monitoring Group we will seek to further develop our community noise monitoring programme to help gain greater understanding of the impacts in communities affected by Gatwick operations.	37. We will continue to provide a Community Noise Monitoring Scheme, operated under the supervision of the Noise and Track Monitoring Advisory Group and the Gatwick Noise Monitoring Group.
36. We will continue to direct all money raised by noise infringements to the Gatwick Airport Community Trust.	**ACTION REMOVED – REFER TO ACTIONS 24 AND 26.** *"We will continue to fine aircraft in breach of the Department for Transport departure noise limits with all such monies passed to the Gatwick Airport Community Trust."* *"We will work with our airlines and noise governance groups to explore the feasibility of introducing supplementary charges for aircraft departures which persistently fail to operate in accordance with Noise Preferential Routes prescribed for the airport as measured by the noise and track monitoring system operated by Gatwick Airport Ltd, with all such monies passed to the Gatwick Airport Community Trust."*
36. a) In conjunction with the Gatwick Noise Monitoring Group and the Noise and Track Monitoring Advisory Group we will continue to commission noise studies to gain an insight into the noise climate in a particular area and we will publish these on our website.	49. In conjunction with the Gatwick Noise Monitoring Group we will commission noise studies to gain an insight into the noise climate in a particular area and we will publish these on our website.

COMPARISON OF OLD AND NEW ACTION PLAN ACTIONS

OLD ACTION PLAN ACTION	NEW ACTION PLAN ACTION
37. By the end of 2011 we will review, develop and consult on alternative metrics for describing the impact of aircraft operations during the course of this action plan. We will work and liaise with other United Kingdom airports and the Department for Transport on the revised metrics whilst seeking review by Aircraft Noise Management Advisory Committee.	39a. We will aim to reach a measure of consensus with community groups on future airport utilisation relative to noise impacts. In order to achieve this we will conduct a review of Government policy including how Government policy should be interpreted and how that policy has been applied in practice. Following the establishment of a workable policy baseline we will aim to develop new noise metrics and reporting to complement the current noise contours and measure our future noise performance. This work will be used to more precisely describe outcomes to support this END Noise Action Plan.
38. We will continue to engage with local community representatives on ground noise issues through the ground noise agenda item of the Noise and Track Monitoring Advisory Group.	**ACTION REMOVED AS THE GROUND NOISE REPORT ISSUED BY AIRSIDE COMPLIANCE IS A STANDING AGENDA ITEM OF NATMAG.**
39. We will conduct customer service surveys for the FPT every three years commencing in 2010.	**ACTION REMOVED – INDEPENDENT REVIEW OF ARRIVALS EXAMINED GATWICK'S NOISE COMMUNICATION STRATEGIES WITH LOCAL COMMUNITIES AND RECOMMENDED AREAS FOR IMPROVEMENT, ALL OF WHICH WERE ACCEPTED.**
40. We will host a local focus forum/seminar every two years, inviting local interest groups and other key stakeholders.	50. We will continue to host an annual airspace seminar, to include an annual update from the Noise Management Board, inviting local interest groups and stakeholders.
41. We will commission and publish night forecast contours for ground noise for 2015 in 2010.	39. We will update to our website the following noise contours: - Summer 16 hour day Leq (actual) - Summer 16 hour day (standard) Leq - Summer Night Leq (actual) - The above compared to the previous year. - Summer Night 10 year average modal split Leq

12 ANNEX TWELVE
COMPARISON OF OLD AND NEW ACTION PLAN ACTIONS

OLD ACTION PLAN ACTION	NEW ACTION PLAN ACTION
42. We will commission and publish summer 16 hour day forecast Leq contours for air noise for 2015 in 2010.	**ACTIONS REMOVED – REFER TO ACTION 39.** *"We will update to our website the following noise contours:* • *Summer 16 hour day forecast Leq contours for air noise* • *Summer 16 hour day forecast Leq contours for air noise* • *Night forecast contours for ground noise* • *Forecast Lden contours for air noise* • *Night quota period 48dB (A) Leq contour"*
43. We will commission and publish forecast Lden contours for air noise for 2015 in 2010.	
44. We will publish on our website the night quota period 48dB (A) Leq contour.	
45. We will publish annually on our website the summer Leq contours as produced by the DfT.	
46. We will continue to engage with local planning authorities in order to ensure they are well informed about noise issues at Gatwick Airport.	51. We will continue to engage with local planning authorities in order to ensure they are well informed about noise issues at Gatwick, and to provide information on the airport and its operation.
47. We will continue to monitor adherence and review the effectiveness of our ground noise operational controls and publish data in the Noise and Track Monitoring Advisory Group meeting minutes.	11. We will report on a quarterly and annual basis the following: • Fixed Electrical Ground Power availability. • The amount of Ground Power Unit dispensations granted. • The number of audit checks of aircraft auxiliary power unit running. • The number of non-compliances of aircraft APU runs identified. • The number of aircraft engine runs undertaken.
48. We commit to maintaining a suitable Noise and Track Keeping system to manage noise, track-keeping and to provide an online self-service flight tracking / complaint facility. We will also enhance this service when upgrades become available.	32. We will ensure that our Noise and Track Keeping systems are suitable, relevant and reliable, providing updates as appropriate.
49. We will continually review and amend as appropriate the Gatwick Airport Directives relating to noise management.	**ACTION REMOVED – REFER TO ACTION 12.** *"We will continue to minimise aircraft auxiliary power unit use in order to reduce ground noise and local air quality emissions via Gatwick Airport Directives and monitoring of compliance."*

COMPARISON OF OLD AND NEW ACTION PLAN ACTIONS

OLD ACTION PLAN ACTION	NEW ACTION PLAN ACTION
50. We will continue to operate and enhance our Noise Management systems.	**ACTION REMOVED – REFER TO ACTION 32.** *"We will ensure that our Noise and Track Keeping systems are suitable, relevant and reliable, providing updates as appropriate."*
51. We will monitor the performance indicators listed within the action plan and where we determine that a discouraging trend is emerging, we will seek to set an annual target to help address it.	**ACTION REMOVED – REFER TO ACTION 38.** *"We will report progress against the published Noise Abatement Procedures contained within the London Gatwick Aeronautical information Publication and this Noise Action Plan on a quarterly basis to the Noise and Track Monitoring Advisory Group, the Gatwick Airport Consultative Committee and on our webpages."*
52. We will benchmark internationally and publish our ranking on operational noise management with other comparable airports in 2010 and 2014.	**ACTION REMOVED – THE 2015 INDEPENDENT REVIEW OF ARRIVALS EXAMINED GATWICK'S OPERATIONAL NOISE MANAGEMENT STRATEGIES AND RECOMMENDED AREAS FOR IMPROVEMENT, ALL OF WHICH WERE ACCEPTED.**
53. We will benchmark internationally and publish our ranking in aircraft noise communications with other comparable airports in 2010 and 2014.	**ACTION REMOVED – THE 2015 INDEPENDENT REVIEW OF ARRIVALS EXAMINED GATWICK'S NOISE COMMUNICATION STRATEGIES AND RECOMMENDED AREAS FOR IMPROVEMENT, ALL OF WHICH WERE ACCEPTED.**
54. We will participate fully, through groups such as the Aircraft Noise Management Advisory Committee in discussing arrival and departure policies.	44. Gatwick will continue to engage actively with Government, the Regulator, Sustainable Aviation and such ad-hoc reviews that may be established and will respond appropriately to relevant consultations, engagement exercises and recommendations arising from those activities.
55. We will continue to monitor Government research into the effects of noise on human health where applicable and appropriate we will adopt the findings of any research and adopt the guidelines outlined by latest Word Health Organisation reviews.	**ACTION REMOVED - Word Health Organisation (WHO) GUIDANCE CONTINUALLY MONITORED.**

12 ANNEX TWELVE
COMPARISON OF OLD AND NEW ACTION PLAN ACTIONS

OLD ACTION PLAN ACTION	NEW ACTION PLAN ACTION
	21. In conjunction with our partners and the Noise Management Board we will adopt a preferred Noise Abatement Departure Procedure.
	22. We undertake to explore opportunities to remove the altitude restrictions on Routes 3 and 4 intended to reduce the noise impact of departing aircraft.
	23. We undertake to explore the feasibility of introducing an alternative Standard Instrument Departure routes within our Noise Preferential Routes in order to provide dispersions and / or respite.
	15. In conjunction with the Noise Management Board, Gatwick Airport will identify a reduced low noise arrival procedure which will capture Low Power Low Drag measures and result in a metric which will supplement Continuous Descent Operations as an additional measurable target.
	16. In line with Noise Management Board initiatives and the commitments in the Sustainable Aviation Noise Road Map, we will work with our airlines and air navigation services providers to improve CDO at Gatwick.
	17. We will implement agreed recommendations of the Noise Management Board Work Plan solutions that are intended to reduce the noise impact of arriving aircraft.
	7. We will report on a quarterly basis to the Noise and Track Monitoring Advisory Group the number of flights delayed from planned daytime arrival into night movements (after 23:30 local).
	8. We will, as far as is practicable, take all necessary steps to manage the late running of aircraft to prevent scheduled day movements taking place during the sensitive night period.

COMPARISON OF OLD AND NEW ACTION PLAN ACTIONS

OLD ACTION PLAN ACTION	NEW ACTION PLAN ACTION
	20. We have an annual limit of no more than 5% off-track departures. In future, we will compare on an annual basis the percentage of off-track departures against the average performance over the previous five years.
	26. We will work with our airlines and noise governance groups to explore the feasibility of introducing supplementary charges for aircraft departures which persistently fail to operate in accordance with Noise Preferential Routes prescribed for the airport as measured by the noise and track monitoring system operated by Gatwick Airport Ltd, with all such monies passed to the Gatwick Airport Community Trust.
	35. We will improve the availability of, and access to, airspace and noise related data.
	47. We will continue to support the existence of, and engage with a Noise Management Board, the work plan and meeting papers, which will be adequately published to our other noise governance groups and online.
	48. We will continue to engage with and provide noise data as required to local Environmental Health Officers through the Gatwick Noise Monitoring Group.
	45. Gatwick Airport will implement relevant recommendations resulting from feasibility studies in conjunction with the CAA and the DfT as and when they are released.
	43. In order to achieve community confidence in the Complaints Handling Policy and provide transparency of information, we will, where appropriate update our procedures relating to the receipt, processing and reporting of aircraft noise complaints.

12

ANNEX TWELVE

COMPARISON OF OLD AND NEW ACTION PLAN ACTIONS

OLD ACTION PLAN ACTION	NEW ACTION PLAN ACTION
	36. We will explore the feasibility of introducing an information service for local communities. This could include updates on airport operations, e.g. scheduled northern runway operations, change in runway direction, meteorological information, scheduled number of aircraft movements during the day and night periods, reported thunderstorm activity etc.
	27. We will continue to provide a vortex-damage repair scheme to repair roofs that have been damaged by aircraft vortices.
	9. We will implement a voluntary ban on operations of Quota Count 4 aircraft within the core night period by the end of 2022.
	2a. If additional aircraft or manufacturer specific noise defects which can be rectified by a modification are identified (similar to the FOPP) we will seek to identify, consult and implement corresponding charging penalties.
	24a. We will review and increase the fines currently levelled against airlines which breech departure noise limits with all such monies passed to the Gatwick Airport Community Trust.
	28a We will undertake a review of our acoustic noise insulation programs by the end of 2019. With subsequent reviews considered every 5 years as noted in Action 28.
	37a. We will seek to expand the Community Noise Monitoring Scheme with additional noise monitoring terminals and update the reporting process to include holistic noise reports for the area around Gatwick Airport.

DETAILS OF THE REVISION PROCESS OF THE DRAFT NOISE ACTION PLAN

AS COMMUNICATED TO THE VARIOUS NOISE GOVERNANCE GROUPS

REVISION OF THE ENVIRONMENTAL NOISE DIRECTIVE NOISE ACTION PLAN 2019 – 2024

Update dated 7 November 2017 to the Gatwick Airport Consultative Committee, Noise and Track Monitoring Advisory Group, the Noise Management Board, Crawley Borough Council and West Sussex County Council.

BACKGROUND

Under the Environmental Noise (England) Regulations 2006, Gatwick Airport Ltd is required to produce a Noise Action Plan, designed to manage noise issues and effects arising from aircraft departing from and arriving at the airport. This is the third version of the Environmental Noise Directive Noise Action Plan and it continues to align with the S106 Legal Agreement with West Sussex County Council and Crawley Borough Council, the work plan of the Noise Management Board and our Decade of Change Sustainability Strategy.

Gatwick Airport's first Environmental Noise Directive Noise Action Plan was published in June 2010 and covered the period 2010 - 2015. This action plan was subsequently updated to cover the period 2013 - 2018. This is the third revision to the action plan and has been devised in line with the latest guidance provided to airport operators by the Department for Environment, Food and Rural Affairs (DEFRA).

ROUND THREE CYCLE

On 26 July 2017, Gatwick Airport Ltd received notification from DEFRA that the airport should revise its Noise Action Plan.

In accordance with the published guidance, the purpose of this revised Noise Action Plan is to manage and where possible reduce the impact of noise from aircraft at Gatwick Airport over the five year period from 2019 – 2024, building on the actions of the 2010 – 2015 and 2013 - 2018 action plans.

REVISING A NOISE ACTION PLAN

The current plan should be reviewed and revised to include, as necessary:

- updated details about the airport and its operation;
- the results of the noise mapping completed in 2017;
- the progress made against the actions described in the current Action Plan;
- updated information about relevant legislation and standards;
- updated relevant national and local policies;
- information about on-going actions; and
- information about any proposed new actions.

As Gatwick Airport already has a Noise Action Plan in place, DEFRA has proposed that a relatively light touch "review and revise" updating process is undertaken. This does not preclude the airport from undertaking a more detailed review and update should the need arise.

CONSULTATION

Section 3.4 of the Guidance for Airport Operators on how to revise Noise Action Plans under the Environmental Noise (England) Regulations 2006 (as amended) states, inter alia:

"It is envisaged that once the plan has been revised it will be presented to the Airport's Consultative Committee for comment, and any other appropriate bodies depending on the extent and nature of the revisions. The Airport Operator should summarise the comments received in the revised plan together with their response to the issues raised."

COMMENCEMENT OF THE CONSULTATIVE PROCESS

This paper is to be presented to the meeting of the Gatwick Airport Consultative Committee, scheduled to take place on Thursday

13

ANNEX THIRTEEN

DETAILS OF THE REVISION PROCESS OF THE DRAFT NOISE ACTION PLAN

AS COMMUNICATED TO THE VARIOUS NOISE GOVERNANCE GROUPS

9 November 2017. It will then be presented to the subsequent meetings of the Noise and Track Monitoring Advisory Group for discussion and the Noise Management Board for information.

For the avoidance of doubt, 9 November 2017 is deemed to be official commencement of the consultative process. Comments on the draft list of actions to be included in the revised draft noise action plan are required to be submitted to GAL by Friday 2 February 2018.

During this period, feedback will also be sought from Crawley Borough Council and West Sussex County Council, both being the Lead Authorities for the purposes of the Section 106 Memorandum of Understanding with the other Local Authorities whose areas are significantly affected by the activities of the Airport.

The feedback received will be considered by Gatwick Airport Ltd and included in Annex 9 of the main Environmental Noise Directive Noise Action Plan document. A draft of Annex 9, together with the final list of proposed actions, will be presented to the GATCOM Steering Group, scheduled for 22 March 2018, for initial consideration and then reported to the main GATCOM meeting, scheduled for 26 April 2018 for consideration and approval.

RECEIPT OF FEEDBACK

It is anticipated that feedback will be received via:

- The Gatwick Airport Consultative Committee,
- The Noise and Track Monitoring Advisory Group,
- Crawley Borough Council,
- West Sussex County Council.

As mentioned above, this paper will be presented to the Noise Management Board. If the Noise Management Board has any comments on the draft list of actions these will be referred to Gatwick Airport Ltd and also reported to the Gatwick Airport Consultative Committee through the usual report back process of the deliberations of the Noise Management Board.

Should members of the public wish to provide feedback on the Environmental Noise Directive Action Plan Actions then it is proposed they provide these to their Gatwick Airport Consultative Committee Representative in the first instance. Feedback received directly by the airport will be considered and included in Annex 9 of the main Environmental Noise Directive Noise Action Plan document.

GATWICK AIRPORT LTD RESPONSE TO FEEDBACK RECEIVED

As detailed in the guidance to airport operators, Gatwick Airport Ltd will provide appropriate responses to the key themes of feedback received and include these in annex 9 of the main Environmental Noise Directive Noise Action Plan document.

FURTHER ROUND OF CONSULTATION

It was agreed at the meeting of GATCOM on 26 April 2018 that the draft Noise Action Plan, having been updated in response to the feedback received, be presented to the 21 June 2018 meeting of the GATCOM Steering Group for consideration prior to it being presented for a final time to the full meeting of GATCOM, scheduled for 19 July 2018. The effect of this additional stage of consultation is that there has been three stages of consultation; commencing with the circulation of a proposed list of Action Plan Actions, the circulation of an initial draft Noise Action Plan and culminating in the final draft of the Noise Action Plan being presented.

ADDENDUM TO THE 2019-2024 END NOISE ACTION PLAN

14

POST SUBMISSION DEVELOPMENTS

In the time since this Noise Action Plan was submitted to DEFRA, there have been two key developments that are relevant to the growth and operation of the airport and the Noise Action Plan and therefore warrant inclusion in this annex document.

GATWICK AIRPORT DRAFT MASTERPLAN

As part of the airport planning process - and reflecting industry best practice - Gatwick Airport Ltd creates and regularly publishes a 'masterplan' to show how the airport intends to develop and grow in the longer term. The masterplan also helps to inform the wider regional and local planning process.

The 2018 draft masterplan sets out proposals for the airport's ongoing development and sustainable growth. It explains the latest thinking on how the airport can meet the increasing demand for air travel and provide Britain with enhanced global connectivity. This draft masterplan is also a direct response to the Government's call in June 2018 for UK airports to look at 'making best use of their existing runways[7]' and this masterplan therefore explores how Gatwick Airport could grow across three scenarios:

1. MAIN RUNWAY: USING NEW TECHNOLOGIES TO INCREASE CAPACITY
   In the near term, the airport has explored how deploying new technology could increase the capacity of the main runway, offering incremental growth through more efficient operations.

2. STANDBY RUNWAY: INNOVATIVE PLAN TO BRING EXISTING STANDBY RUNWAY INTO USE
   Under its current planning agreement, the airport's existing standby runway is only used when the main runway is closed for maintenance or emergencies. However, the 40-year planning agreement that prevents the simultaneous use of the two runways will come to an end in 2019. The draft master plan sets out for the first time how we could potentially bring the existing standby runway into routine use for departing flights, alongside the main runway, by the mid-2020s.

3. ADDITIONAL RUNWAY: SAFEGUARDING FOR THE FUTURE
   While the airport is not actively pursuing the option of a building a brand new runway to the south of the airport - as was suggested through the Airports Commission process – the airport believes it is in the national interest to continue to safeguard this land for the future as part of its masterplan.

   A period of public consultation and associated public sessions has taken place and in 2019, the airport will publish a final masterplan document which will consider the feedback received during the consultation period.

For the avoidance of doubt, should options two or three be implemented at Gatwick Airport, these would be deemed to be a 'major development' as set out in section 1.11 of the 'Guidance to Airport Operators on how to revise Noise Action Plans under the Environmental Noise (England) Regulations 2006 (as amended)' that states:

"Action Plans must be drawn up by the airport operators and be based on the results of the noise mapping. The Regulations also require the Action Plans to be reviewed at least every five years and revised if necessary and whenever a major development occurs affecting the existing noise situation."

[7] https://www.gov.uk/government/publications/aviation-strategy-making-best-use-of-existing-runways

14 ANNEX FOURTEEN
ADDENDUM TO THE 2019-2024 END NOISE ACTION PLAN

For the purposes of clarity, the term 'major development' is not defined in the Regulations or the Environmental Noise Directive but it would include, for example, the use of a new runway.

NEW AVIATION STRATEGY

On 17 December 2018, the Department for Transport (DfT) announced that it is seeking feedback on its green paper which outlines proposals for a new Aviation Strategy. The strategy will set out the challenges and opportunities for aviation to 2050 and beyond and will emphasise the significance of aviation to the UK economy and regional growth.

The first step in the process of developing the strategy was the publication of an initial call for evidence in July 2017 on the strategy's aims and objectives. The government then published a 'next steps' document in April 2018 which set out some of the specific issues to be considered as part of the policy development process.

The consultation document, issued on 17 December 2018, forms part of the government's final consultation on the policy proposals for the Aviation Strategy. It is structured around the original objectives of the strategy, updated to reflect the feedback that the government has received to date on their relevance and priority.

The strategy will focus on:

- developing a partnership for sustainable growth which meets rising passenger demand, balanced with action to reduce environmental and community impacts
- improving the passenger experience, including through technology and innovation, a new passenger charter and action to reduce delays at the border
- building on the UK's success to establish new connections across the world and create greater choice for consumers.

The consultation document[8] states that demand for aviation has grown significantly since 2010 and while the government welcomes growth in the sector, it advises that this growth must be sustainable. Achieving this requires a partnership between the government, the regulator, the industry and other interested parties to work within a comprehensive policy framework to better manage the environmental impacts of the sector.

The consultation therefore:

- outlines the government's preferred approach for developing a framework for sustainable growth and the respective roles for the government and the industry
- makes the case for making the most efficient use of infrastructure, including by considering the system for slot allocation at airports and continuing to support the industry in improving resilience
- describes the approach being taken to modernise airspace to deliver capacity and environmental benefits
- sets out a robust policy framework and package of measures to reduce the harmful effects of aviation on the environment, such as carbon emissions, air quality and noise
- sets out the government's expectations that communities living close to airports should benefit directly from growth.

The consultation period is scheduled to run until 11 April 2019. A final white paper version of the aviation strategy will be published by the middle of 2019.

[8] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/765253/aviation-2050-web.pdf

ADOPTION OF THE 2019 – 2024 END NOISE ACTION PLAN

Department for Environment Food & Rural Affairs

Seacole Building
2 Marsham Street
London SW1P 4DF

Dr Thérèse Coffey MP
Parliamentary Under Secretary of State
for the Environment

T 03459 335577
defra.helpline@defra.gsi.gov.uk
www.gov.uk/defra

Lee Howes
Airspace and Environmental Performance Manager
Gatwick Airport
Horley
Gatwick
RH6 0NP

11 February 2019

Dear Mr Howes,

EU ENVIRONMENTAL NOISE DIRECTIVE (2002/49/EC): ADOPTION OF ROUND 3 AIRPORT NOISE ACTION PLAN

I am writing to inform you that I have formally adopted the Noise Action Plan for Gatwick Airport, as required by the Environmental Noise Directive and the Environmental Noise (England) Regulations 2006 (as amended).

In line with the updated guidance for airport operators on revision of airport Noise Action Plans, I am formally requesting that the final plan be published in an electronic format within 28 days.

The action planning process has provided a valuable opportunity for airports to bring together all their noise management activities into one living document. As living documents, the plans must be reviewed and, if necessary, revised with the participation of the public, whenever a major development occurs affecting the existing noise situation, and at least every five years.

Yours sincerely,

[redacted]

DR THERESE COFFEY MP

16 | ANNEX SIXTEEN
KEY STATISTICS 2018

Gatwick served more destinations than any other UK airport in 2018 (source OAG)

- **Total passengers:**
  46.1 million
- **Aircraft movements:**
  284,000
- **Total cargo:**
  113,000 metric tonnes
- **Total number of aircraft seats:**
  53.1 million
- **Average number of passengers per flight:**
  165
- **Average load factor:**
  86.7%
- **Biggest airline:**
  easyJet carrying 18.7m passengers
- **Long haul passengers:**
  8.6m (+18%)
- **Top destination served:**
  Barcelona (1.6m passengers)

OUR AIRLINES

Uniquely, we're home to a large mix of airline operators, with over 50 currently operating regularly from Gatwick. This means that we can offer our passengers a greater choice, through a combination of full service, low-cost and charter services, with many destinations having multiple daily services.

In 2018, Gatwick welcomed five new airlines. We will continue with our strategy of encouraging new airline partnerships, so that we can offer our passengers the best selection of travel options.

OUR DESTINATIONS

In an open market where airlines can choose where to fly from, Gatwick has been competing successfully with other London airports to win new routes to the UK's key trading partners, as well as leisure destinaitons. In 2018, we added 17 new destinations to our ever-growing network. These included nine long-haul destinations, such as:

- Buenos Aires — Argentina
- Chicago, Austin and Tampa — USA
- Halifax — Canada
- Doha — Qatar
- Shanghai — China

There were also new short-haul routes added, with even more choice to countries such as Germany, Poland, Jordan, Greece and Montenegro.

PASSENGER PROFILE

- Sex: Male 47%; Female 53%
- Socio-economic group: AB: 38%; C1: 43%; C2: 13%; DE: 4%*
- Nationality: UK 63%; Overseas 37%
- UK business 10 %
- UK leisure 60 %
- Overseas business 7 %;
- Overseas leisure 23 %

* Due to rounding up/down does not add up to 100%



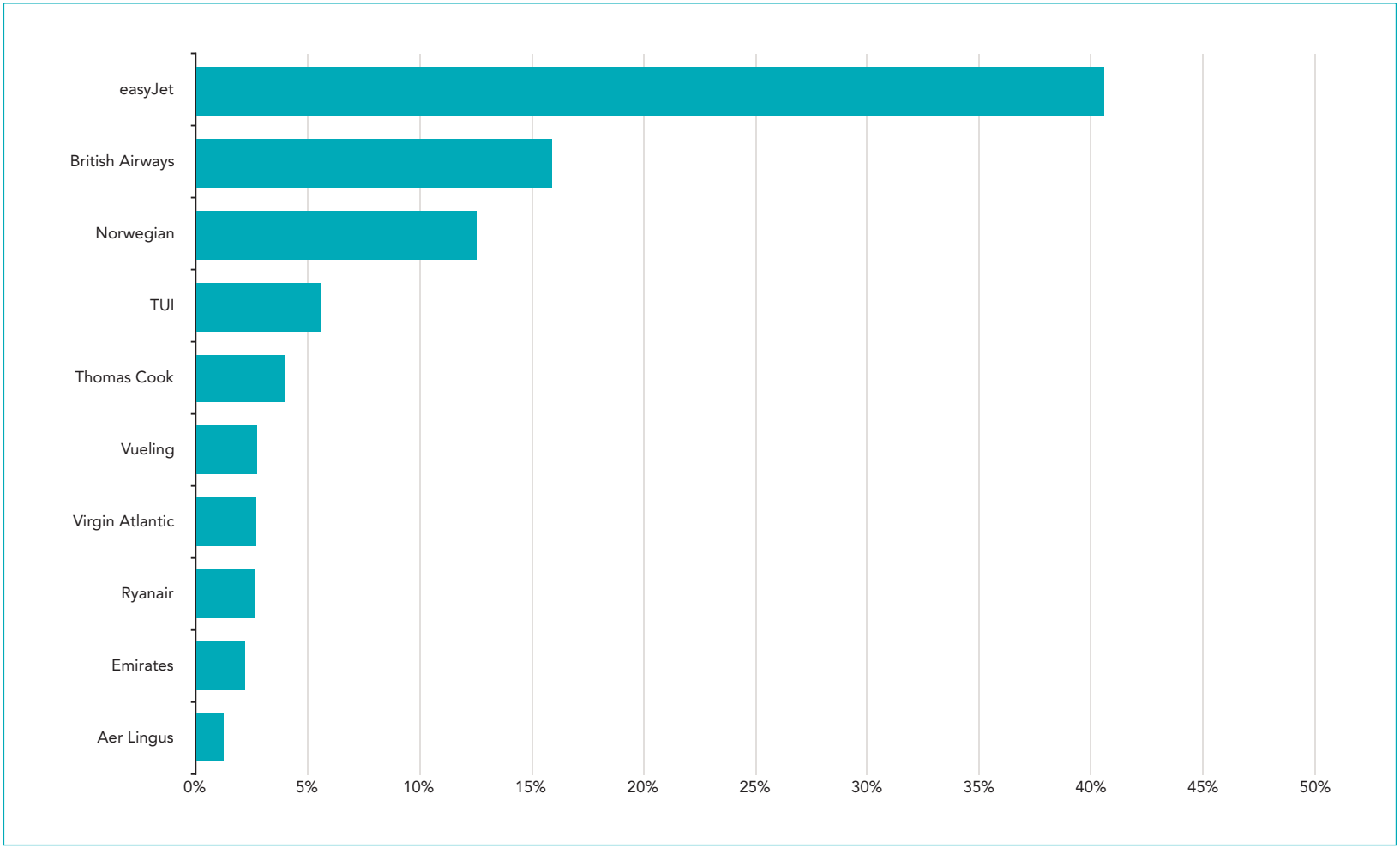
AWARDS

We're proud of Gatwick Airport and our achievements and we're delighted that some of our work is being recognised by external organisations. Below are just a few of our hard won awards from 2018 and 2019.

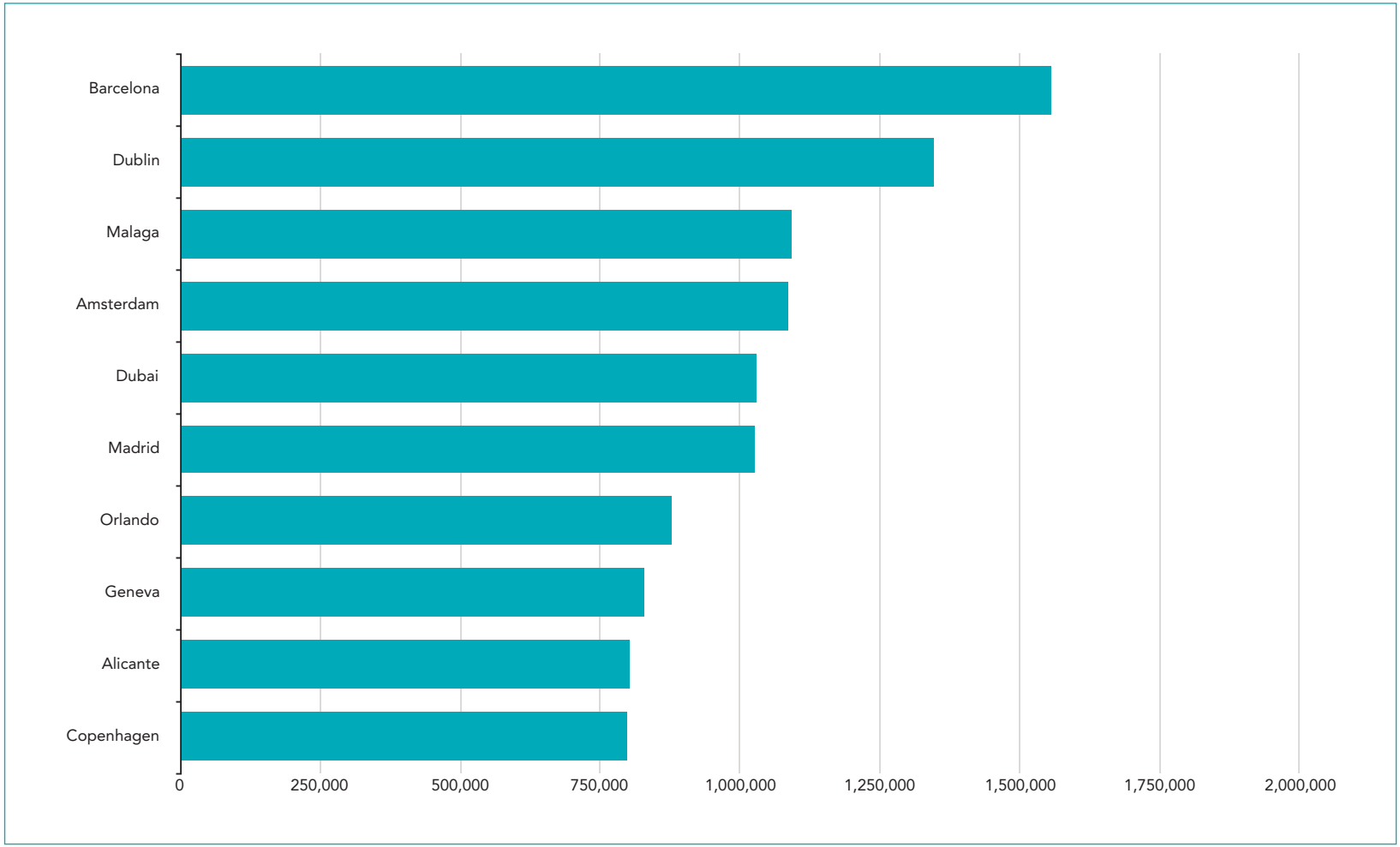
- **The Wildlife Trust** — Biodiversity Benchmark Award
- **Carbon Trust** — Best combined reduction of carbon, waste & water
- **Disability Smart Award** — Inclusive Service Provider of the Year
- **Future Travel Experience Europe** — Most Innovative Airport in Europe
- **London Transport Awards** — Airport of the Year
- **Loo of the Year** — Airports winner, England
  Transport sector winner
  Three platinum awards for toilets
- **National Technology Awards** — Mobile Innovation of the Year for our passenger app
- **Real IT awards** — Mobile App of the Year for passenger app
  Cloud Project of the Year
- **Royal Society for the Prevention of Accidents** — Gold Medal Award for five years of achieving Gold Standard
- **Security & Fire Excellence Awards** — Counter Terrorism Project of the Year
- **Top 50 companies for customer service** — Named in the top 50 UK companies for excellence in customer services
- **UK IT Industry Awards** — IT project team of the year for network refresh (with Hewlett Packard Enterprise)

16 | ANNEX SIXTEEN
KEY STATISTICS 2018

Top 10 Airlines by Passenger volume (2018)

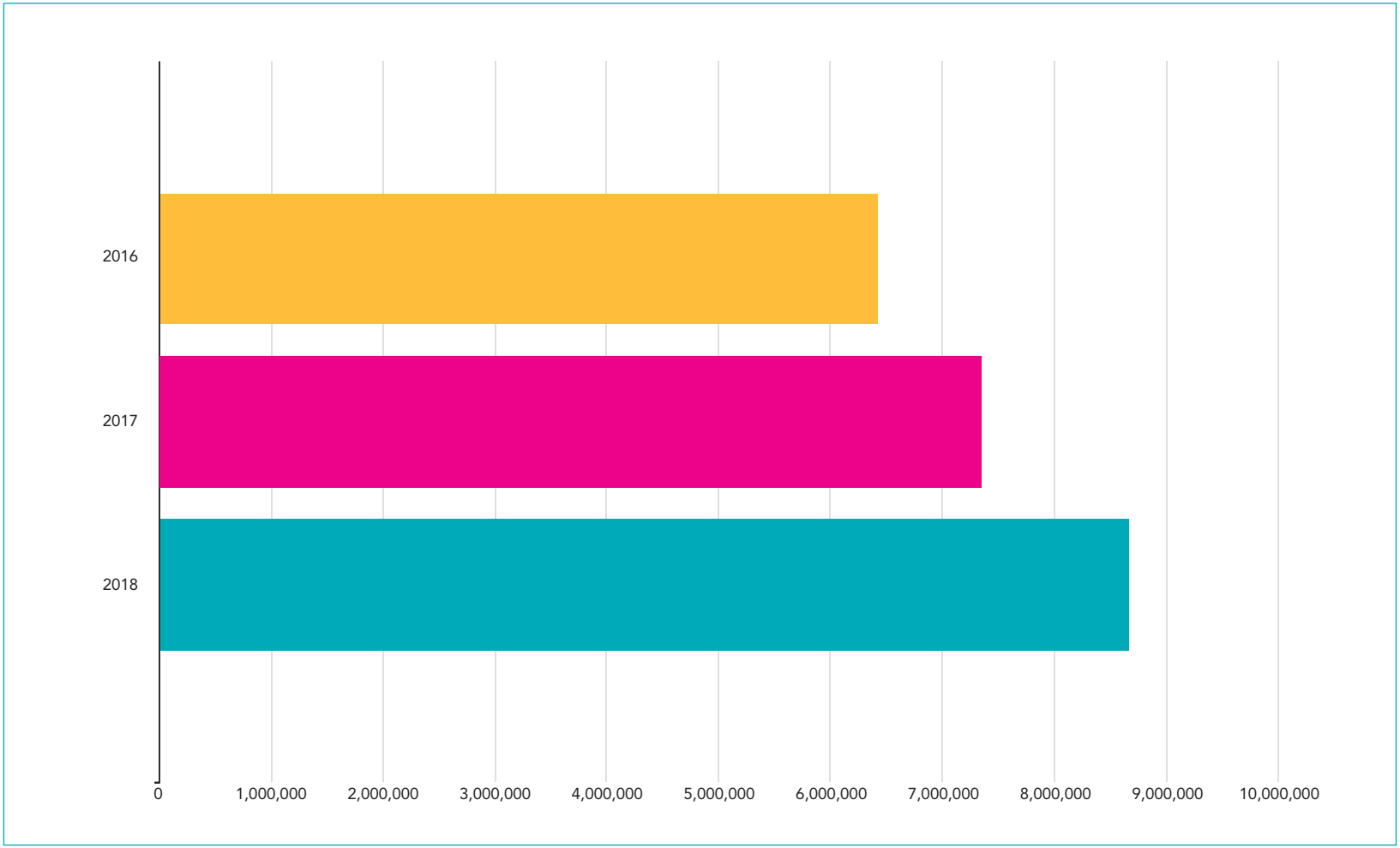


Top 10 Routes by Passenger volume (2018)

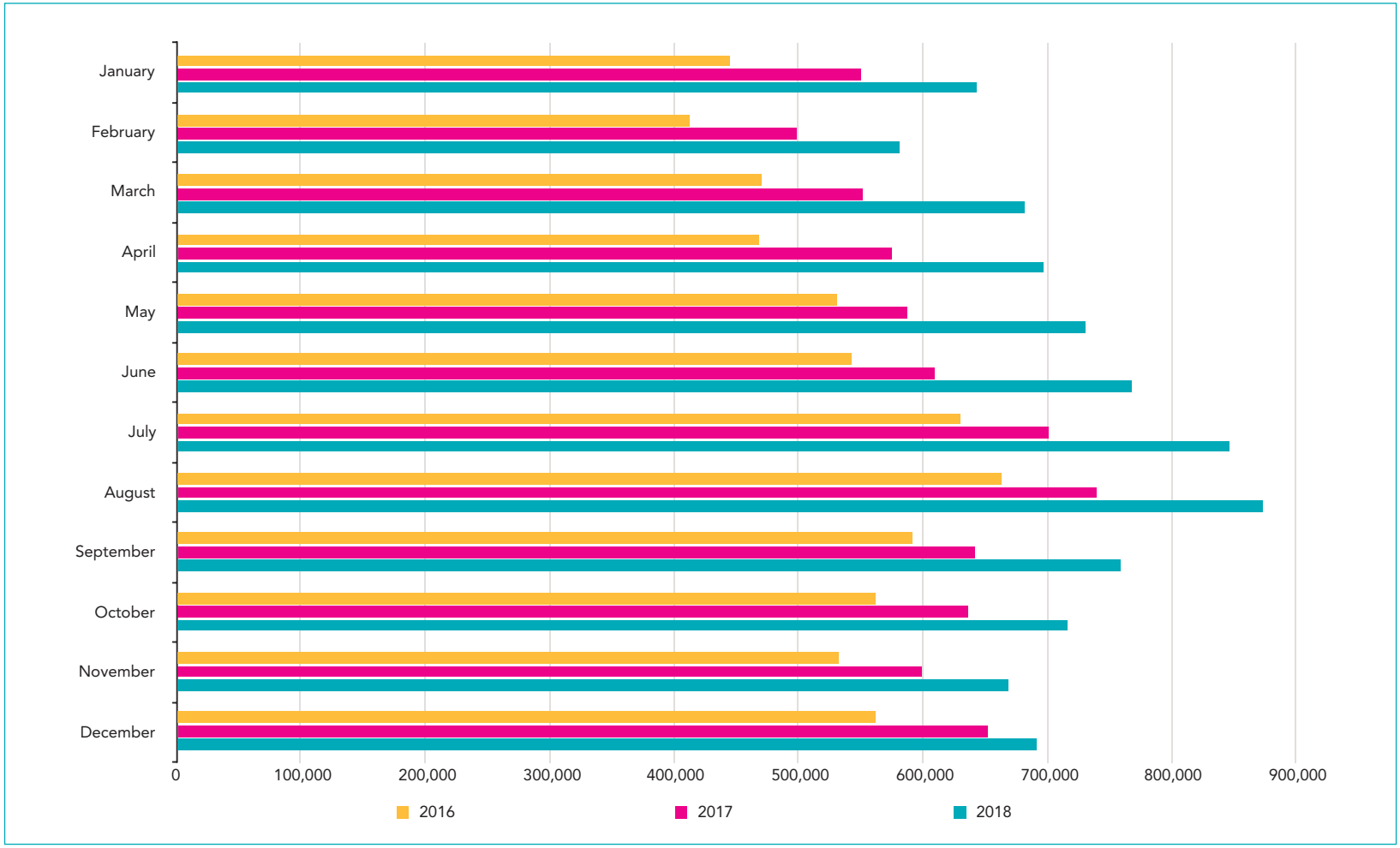


16 ANNEX SIXTEEN
KEY STATISTICS 2018

Long haul passenger growth by year (2016-2018)



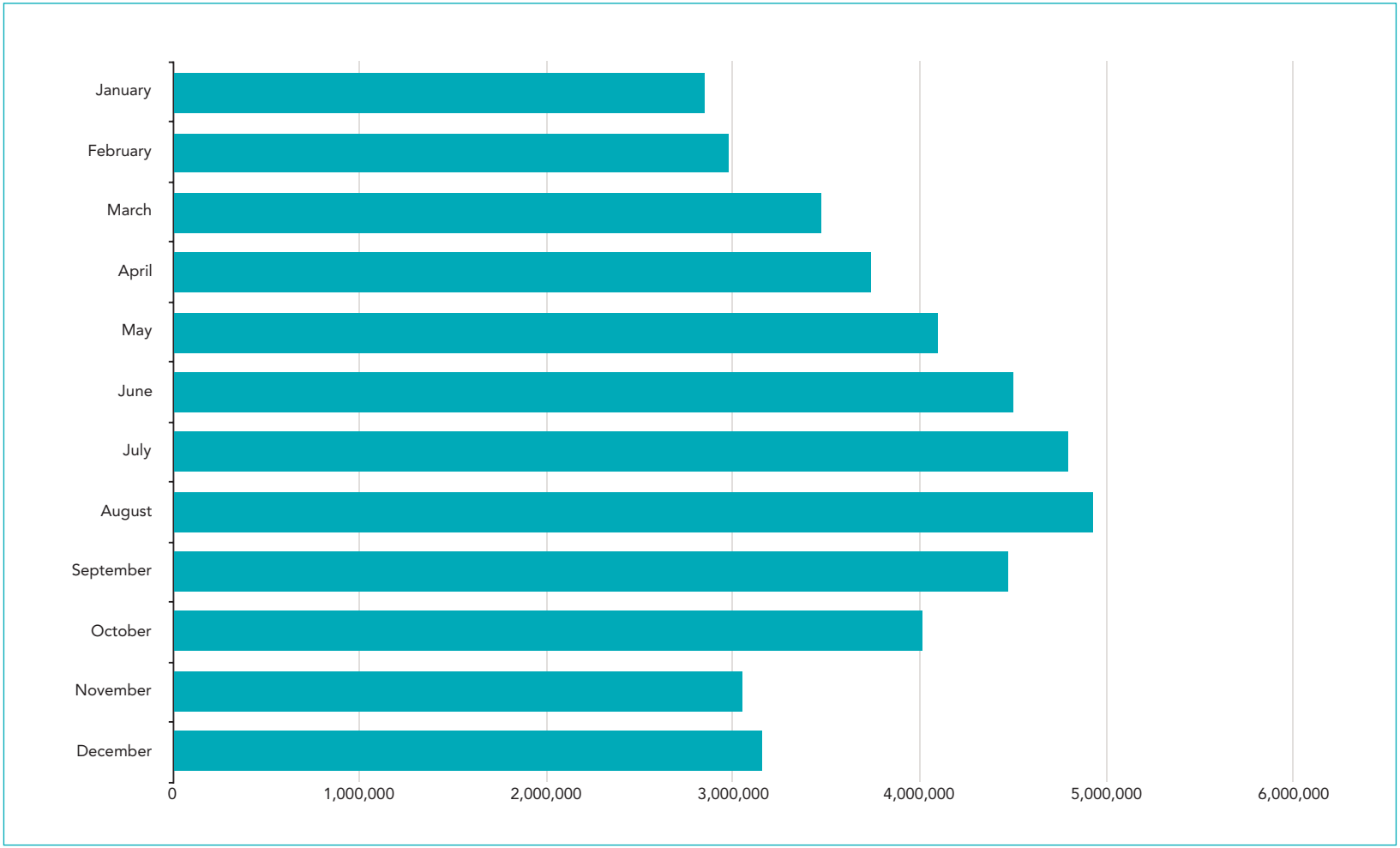
Long haul passenger growth by month (2016-2018)



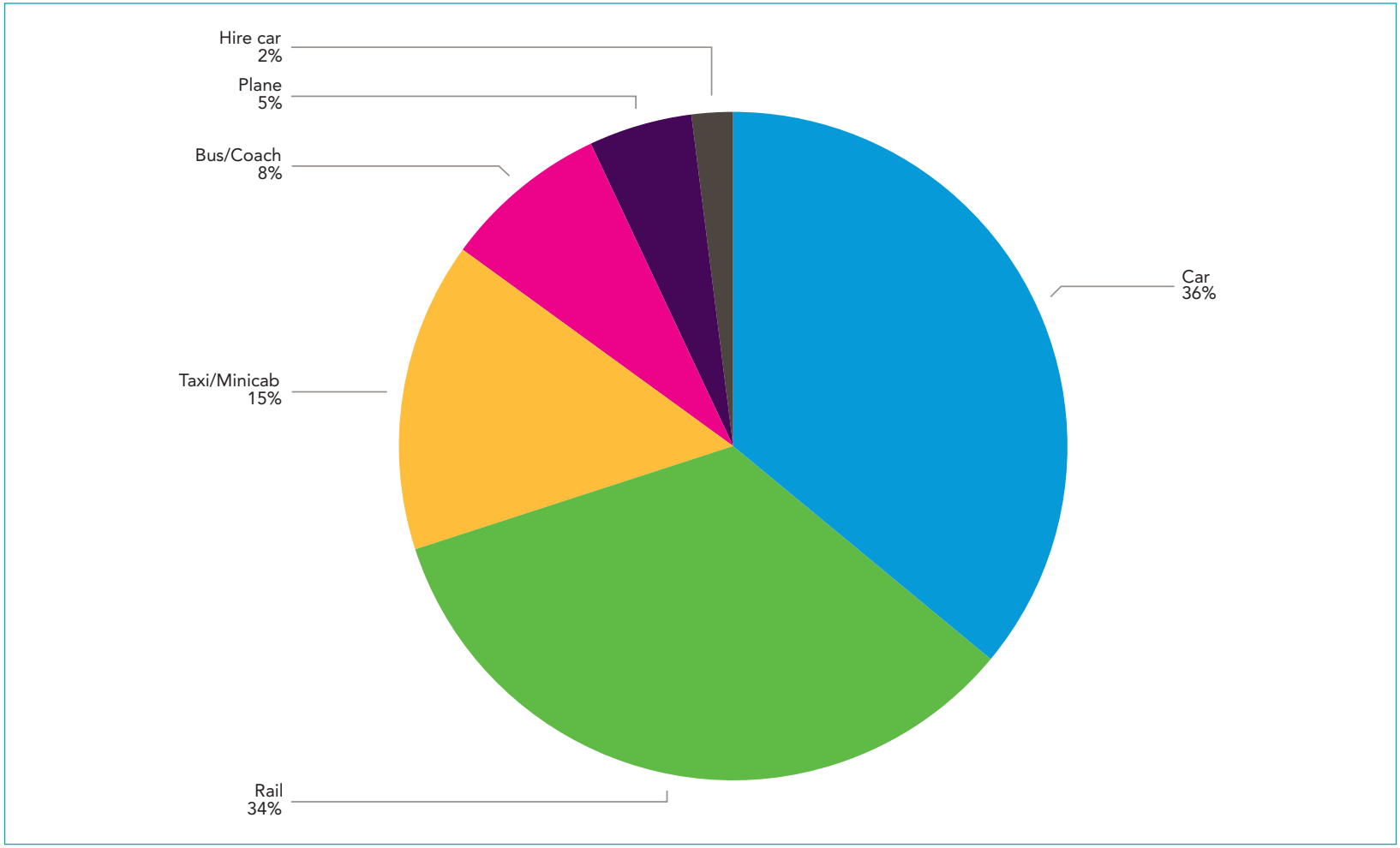
ANNEX SIXTEEN

KEY STATISTICS 2018

Passenger volume by month (2018)



How passengers get to Gatwick





YOUR LONDON AIRPORT
Gatwick

ISSUED BY GATWICK AIRPORT LIMITED

Corporate Affairs, Planning and Sustainability
7th Floor Destinations Place
Gatwick Airport
West Sussex
RH6 0NP

www.gatwickairport.com/noise

First published 13 June 2018
Gatwick Airport Limited. Registered in England 1991018

© GATWICK AIRPORT LTD 2019
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior written permission of Gatwick Airport Ltd.

KMT 03/19