

An aerial photograph of Gatwick Airport's northern runway and taxiway. The runway is a long, straight concrete strip with white markings, including the number '26' and the letter 'L'. Several aircraft are visible on the taxiway and runway. In the foreground, a large white Airbus A380 is taxiing. To its left, a smaller white aircraft is also taxiing. Further up the runway, another white aircraft is visible. In the bottom left corner, a red and white easyJet aircraft is taxiing. The surrounding area includes green grass, taxiway lights, and airport buildings in the distance. The text 'YOUR LONDON AIRPORT' is written in white, uppercase letters, and 'Gatwick' is written in a white, cursive font below it.

YOUR LONDON AIRPORT
Gatwick

*Our northern runway: making best use
of Gatwick*

Preliminary Environmental Information Report
Appendix 14.9.5: Noise Envelope
September 2021

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1 Introduction

1.1.1 This document forms Appendix 14.9.5 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

1.1.2 This document provides details of the approach to developing a noise envelope for the Project.

Background

1.1.3 The Airports National Policy Statement (NPS) (paragraph 5.60) includes policy relating to the proposed third runway at Heathrow. The NPS requires Heathrow to put forward a noise envelope for its third runway proposal:

'Such an envelope should be tailored to local priorities and include clear noise performance targets. As such, the design of the envelope should be defined in consultation with local communities and relevant stakeholders and take account of any independent guidance such as from the Independent Commission on Civil Aviation Noise. The benefits of future technological improvements should be shared between the applicant and its local communities, hence helping to achieve a balance between growth and noise reduction. Suitable review periods should be set in consultation with the parties mentioned above to ensure the noise envelope's framework remains relevant.'

1.1.4 For Gatwick's Northern Runway Project, the Planning Inspectorate's Scoping Opinion noted that:

'The Inspectorate notes that there is no reference to a defined 'noise envelope' as referred to in paragraph 5.60 of the Airports NPS, and the Applicant should

make efforts to agree the need for such provisions with relevant consultation bodies as a mechanism to manage noise effects.'

1.1.5 This appendix discusses the concept of a noise envelope, the options that have been considered for a noise envelope for the Project, the preferred option that is proposed by GAL, as summarised in Section 14.8 of Chapter 14 of the PEIR, and the requirements of Regulation (EU) 598 that have been addressed.

2 Noise Envelope Options

Requirements of a Noise Envelope

2.1.1 CAP 1129 Noise Envelopes (CAA, 2013) gives guidance as to the forms that noise envelopes can take, and how they can be implemented. CAP 1129 (2013) states that:

'To function as intended, a noise envelope should as a minimum:

- 1. be clearly defined
- 2. be agreed among stakeholders
- 3. be legally binding
- 4. not be compromised by the lack of up-to-date understanding of the relationship between annoyance and the exposure to aircraft noise
- 5. take account of new technology
- 6. have proportionate aims which are appropriate for the airport to which it applies ie to permit growth, maintain a status quo, or manage a reduction in noise impact.'

Approaches to Noise Envelopes

2.1.2 CAP 1129 observes there are three possible approaches to setting a noise envelope:

- restricting inputs;
- restricting noise impact; and
- restricting noise exposure.

2.1.3 Night restrictions are an example of a noise envelope already in place at Gatwick Airport that restricts inputs. In their case, the restrictions relate to numbers of night flights and total quota counts (QCs) of night flights, in the summer and winter seasons.

2.1.4 Noise envelopes that restrict or limit inputs have the advantage of being relatively easy to predict and administer, but they do not

give a direct measure or limit on the noise impact experienced in the communities around the airport. Neither do they provide any incentive for the airport or airlines to bring forward quieter operating procedures.

2.1.5 Noise envelopes that restrict noise impacts can be set in terms of the extent of noise effects eg Schiphol Airport has limits of populations highly annoyed and populations sleep disturbed. However, these rely on applying dose/response relationships for the effects, which can generate uncertainty.

2.1.6 More commonly, noise envelopes that restrict noise impacts use noise contours to either limit the area of the contour or the population within it. The choice of noise contour metric should reflect the impact.

2.1.7 Setting a noise envelope in terms of the population within a given noise contour, has the advantage that it directly relates to the noise impact on the community. However, the population size (and number of properties) within the area around Gatwick Airport is not within the airport's control and a contour set on this basis could not be monitored or applied with any certainty. Using the physical size of the noise contours avoids this uncertainty.

Options for a Noise Envelope at Gatwick

2.1.8 CAP 1129 outlines the following main options for noise envelopes:

- aircraft movement caps;
- passenger throughput cap;
- noise quota count (QC) cap;
- noise level caps;
- population/dwellings exposed to noise;
- number of people annoyed (daytime);
- number of people sleep-disturbed (night-time);
- Person-Events Index (PEI);
- Average Individual Exposure (AIE);
- noise contour shape; and
- noise contour area.

2.1.9 These are discussed below.

Aircraft Movement Cap

2.1.10 CAP 1129 notes that: *'The simplicity of the movement cap is clearly attractive in terms of engaging people, but it has drawbacks as well. A key drawback is that it does not take into account the noisiness of aircraft and would therefore not offer incentives to industry to operate quieter aircraft.'*

2.1.11 It is also noted that movement caps do not encourage any other noise reduction measures such as quieter operating procedures.

Passenger Throughput Cap

2.1.12 The disadvantages of the passenger movement cap are similar to an aircraft movement cap. The intent of a passenger cap may be to use passenger numbers per flight as a proxy for noise level, but in practice there is a weak link between the two.

2.1.13 Restricting passenger throughput is also harder to administer.

Noise Quota Count (QC) Cap

2.1.14 Gatwick already has a Quota Count and movements noise envelope, for night flights under Government Night Flights Restrictions, which are in place at the designated London airports.

2.1.15 The Quota Count element of the system gives each aircraft a separate score based on its certificated noise levels for arrival and departure. Thus, for example, a particular aircraft could score 1 point on departure, and 0.5 points on arrival.

2.1.16 During the summer season, night-time (23:30-06:00 hours) air traffic movements at Gatwick are capped at 11,200 and during winter this reduces to 3,250. The night quota limits are 5,150 points in the summer (reduced from 6,200 in 2018) and 1,785 points in the winter (reduced from 2,000 in 2017/18).

2.1.17 A QC system aimed at meeting the objectives of a noise envelope would need to extend the Night Restrictions system to cover the full 24 hours and may split day and night.

2.1.18 The CAA reviewed the QC system in use at the designated airports in 2002 (ERCD Report 0204, CAA 2002) and concluded that the system was still valid, but noted: *'Ultimately the reliability of any classification system based on certification depends on the correlation between certificated and operational noise.'*

2.1.19 The CAA carried out a Quota Count validation study at Heathrow Airport (CAP 1869, CAA 2020) which compared in service noise levels and QCs for 131 aircraft types. It concluded: *'For the majority of aircraft types monitored, including new aircraft designs such as the Airbus A350 and Boeing 787, the operational arrival and departure noise levels correlated well with the QC classifications. However, large differences between the operational noise levels and the QC classifications were observed for some aircraft types, including some relatively new aircraft designs.'*

... the operational approach levels of 13 aircraft types (out of 111) lie entirely above their QC bands.

On departure, the operational levels of 21 aircraft types (out of 131) lie entirely above their QC bands, including variants of the A320neo and B737 MAX 8.'

2.1.20 The QC system applies a quota count to each aircraft related to its noise levels measured at three locations during certification; 2 km from touchdown, and on departure on a side-line and 6.5 km from 'start of roll'. At Gatwick Airport, these locations are all within approximately 3 km of the airport. Two shortcomings of the QC system arise from this. As noted by the CAA review, aircraft in operation may systematically generate slightly different noise levels than during certification, due to airline procedures, leading to incorrect weightings between aircraft. Secondly, QC takes no account of aircraft noise levels more than about 3 km from the airport. Most of the people affected by noise from Gatwick airport live well beyond 3 km from the airport.

2.1.21 So, a QC limit would give no credit to an airport that develops advanced noise abatement operating procedures that reduce noise further away. Greater climb rates, for example, would go unnoticed in a QC system envelope whereas they would reduce noise levels in affected areas and potentially make for significant changes in the shape and size of noise contours.

Noise Level Caps

2.1.22 Noise contours are modelled based on noise measurements and cover entire areas affected by noise. It is possible to limit noise levels measured at particular locations, under particular arrivals and departure routes, but this has several disadvantages compared to contours. Clearly only limited locations are represented, not all communities. There may be ways to reduce noise levels at these locations that increase noise at the other locations. Measurements can also be affected by other noise and weather conditions. Noise contours, provided they are reliably predicted based on detailed information on aircraft operations, are therefore considered more appropriate than noise levels for setting a noise envelope.

Population/Dwellings Exposed to Noise

2.1.23 Setting a noise envelope in terms of the population within a given noise contour, such as L_{eq} 16 hour day and L_{eq} 8 hour night, has the advantage that it directly relates to the size of the noise impact on the community. However, the population within the area around Gatwick is not within the airport's control and a contour set on this

basis could not be monitored or applied with any certainty. Furthermore, any new noise sensitive development under the airport flight paths should be consented with noise mitigation in place where necessary to mitigate noise impacts, but the extent to which this is achieved varies across local planning authorities and would be complex to account for when administering a noise envelope.

2.1.24 So, the potential advantage of setting a noise envelope in terms of the population within given noise contours is likely to be offset by the uncertainty it creates compared to setting a noise envelope in terms of noise contour areas.

Number of People Annoyed or Sleep Disturbed

2.1.25 Noise envelopes that restrict noise impacts can be set in terms of the extent of noise effects eg Schiphol Airport has had limits of populations highly annoyed and populations sleep disturbed. However, these rely on applying dose/response relationships for the effects, which can generate uncertainty, can vary between locations and over time, and can be subject to challenge.

2.1.26 In addition, existing housing may be fitted with sound insulation reducing sleep disturbance. Similarly, new housing may only be permitted with good sound insulation to reduce sleep disturbance. But the benefits of these would be very difficult to capture in this form of envelope.

Person-Events Index (PEI)

2.1.27 The Person Events Index is a measure developed in Australia that uses the number of noise events above a given threshold, like the Number Above metrics (N65 and N60) used in this PEIR. It then sums the results at every population point (eg home) within the community. It is a measure of the total noise load or burden the airport places on the surrounding population. However, it takes no allowance of the extent to which noise events are above the threshold and, as with noise impact metrics, uses population size and so is affected by population growth with the inherent complications/uncertainty discussed above.

Average Individual Exposure (AIE)

2.1.28 Average Individual Exposure is simply the PEI divided by the total population, ie the average number of noise events per exposed person. Like PEI it takes a simplistic account for noise level and uses population and so is affected by population growth.

Noise Contour Shape

2.1.29 In principle, a contour shape provides a contour that relates to community locations and so provides greater protection for communities. However, this would be more onerous than a contour area, placing greater restriction on an airport's operations. Fluctuations in weather or operational requirements could pose challenges. Schiphol airport is probably the most well-known example of a form of contour area limit. It has five runways providing some flexibility in implementation that would not be available at Gatwick. A contour area shape is also complex to administer, and not considered to be appropriate for a single runway airport such as Gatwick.

Noise Contour Area

2.1.30 CAP 1129 notes that:

'A clear and concise way of describing the noise exposure in the vicinity of an airport is to quote the area enclosed by the noise contour of a particular noise metric and level. Being a single numerical value, it is straightforward to set a limit on this value to restrict aircraft noise exposure in the vicinity of an airport.'

2.1.31 The choice of noise contour metric should reflect the impact. Summer season $L_{eq, 16 \text{ hour day}}$ or $L_{eq, 8 \text{ hour night}}$ contours are the most common contours used in the UK because their relationships to annoyance and sleep disturbance in this country are well understood. Noise event metrics such as L_{max} are less effective, because, taking no allowance for numbers of noise events, they are not good indicators of health effects when used in isolation, and provide no control on the numbers of events. Other noise metrics that accumulate noise events during the day or night are available, such as N60 and N65, but their relationship with health effects is less well understood than the L_{eq} metrics.

2.1.32 Using the areas of $L_{eq, 16 \text{ hour day}}$ or $L_{eq, 8 \text{ hour night}}$ contours is therefore likely to be the most appropriate noise contour option. It would incentivise the airport to use the quietest aircraft, using the quietest operating procedures, whilst allowing the airport to grow within a certain noise limit. In order to give certainty on future both day and night noise, $L_{eq, 16 \text{ hour day}}$ and $L_{eq, 8 \text{ hour night}}$ contours would be needed. The decision on which contour noise levels to

use (eg for daytime $L_{eq, 16 \text{ hour}}$ 51, 54, 57, 60 dB etc) would affect both its performance as an indicator of noise impact and the extent to which it incentivises good operating procedures. In theory any contour value of $L_{eq, 16 \text{ hour day}}$ or $L_{eq, 8 \text{ hour night}}$ relates to other values in terms of its growth, but in practice small variations are seen. A larger contour, encompassing communities affected further from the airport would better reflect community impact, and unlike a QC limit would allow the benefit of improved operating procedures such as steeper departures and low noise arrivals procedures to be measured and hence incentivised. The most appropriate contour levels are therefore the day and night Lowest Observable Adverse Effect Level (LOAEL) prescribed by DfT of $L_{eq, 16 \text{ hour day}}$ 51 dB and $L_{eq, 8 \text{ hour night}}$ 45 dB.

2.1.33 To avoid fluctuations from year to year due to variations in runway use because of different weather, standard mode contours should be used based on long-term average day and night runway modal splits.

2.1.34 The limiting $L_{eq, 16 \text{ hour day}}$ and $L_{eq, 8 \text{ hour night}}$ areas should be based on the predicted ranges of contour areas foreseeable at the time, taking account of the operating and other noise mitigation measures that the airport has committed to.

2.1.35 GAL has considered these options, and the benefits and disbenefits of each for Gatwick Airport, and the following section describes the noise envelope proposed for the Project.

3 The Proposed Noise Envelope

3.1.1 This section reproduces part of Section 14.8 of the PEIR so as to provide all the noise envelope material in a single location.

3.1.2 GAL proposes a noise envelope that sets limits in terms of the areas of the daytime LOAEL contour $L_{eq, 16 \text{ hour day}}$ 51 dB, and the night-time LOAEL contour $L_{eq, 8 \text{ hour night}}$ 45 dB. The LOAEL contours have been chosen because they represent the lowest level of observable adverse effects during the day and night.

3.1.3 The limiting $L_{eq, 16 \text{ hour day}}$ and $L_{eq, 8 \text{ hour night}}$ contour areas are proposed with reference to the forecast noise impacts reported in

this PEIR, taking account of operating and other measures to limit noise¹.

3.1.4 The noise assessment reporting in Chapter 14 of the PEIR has reported the most likely noise impacts based on the central case fleet air traffic movement (ATM) forecasts, as discussed in Section 14.5. This is considered to represent the most likely rate of fleet transition based on current assumptions regarding the airlines' fleet procurement programmes and business models. The noise assessment presented in Chapter 14 also reports the noise impacts associated with a slower transition fleet that supposes the rate of fleet transition is delayed by about five years, particularly owing to uncertainties due to Covid. Whilst the central case fleet is considered most likely to occur, the slower transition fleet could still occur and therefore the noise envelope proposed is based on the noise modelling of this fleet. The slower transition fleet still builds in assumptions that the noisiest aircraft currently flying at Gatwick are phased out by the point the northern runway opens and that substantial investment in next generation aircraft will occur. For example, in 2019, around 2% of the Gatwick fleet did not meet the ICAO Chapter 4 noise standard, however, these aircraft produce the highest individual noise levels and make a disproportionate contribution to the contour areas. Therefore, the expected removal by airlines of a proportion of these aircraft will deliver a significant improvement in the noise environment.

3.1.5 The slower transition fleet supposes the rate of fleet transition is delayed by about five years, particularly owing to uncertainties due to Covid. Whilst the central case fleet is considered most likely to occur, the slower transition fleet still builds in assumptions that the noisiest aircraft currently flying at Gatwick are phased out by the point the Northern Runway opens and provides a level of certainty that is necessary given the uncertainty post Covid. Therefore the noise envelope proposed is based on the noise modelling of this fleet

3.1.6 The noise assessment has considered noise levels from the Project in 2029, 2032, 2038 and 2047 and demonstrated that for the central case the day and night noise contour areas would decrease relative to the 2019 airport in all successive assessment years with the Project. The effect of the Project on opening in 2029 is to increase the noise levels relative to the

¹ This is consistent with the approach approved by the Planning Inspectors for the Stansted planning application appeal (ref: APP/C1570/W/20/3256619) in May 2021, which consented the

expansion of the airport with planning conditions that included limits on the areas of the $L_{eq, 16 \text{ hour day}}$ and $L_{eq, 8 \text{ hour night}}$ contour areas (albeit at higher noise levels of $L_{eq, 16 \text{ hour day}}$ 54 dB, and $L_{eq,$

$8 \text{ hour night}}$ 48 dB) based on the forecasts used in the Environmental Statement that accompanied the application.

future baseline, with maximum contour areas about three years later in 2032, before dropping slightly in 2038, the design year for the runway, when 382,000 commercial ATMs/year would be operating. GAL proposes to set the noise envelope to limit noise levels between opening of the northern runway and the peak noise year and then to set a lower noise envelope limit to provide certainty that noise levels would reduce when the runway design throughput of 382,000 ATMs/year is reached and beyond.

3.1.7 Regulation EU 598/2014 seeks to ensure that 'noise related operating restrictions' are only imposed when other measures within the balanced approach have first been considered, and where those other measures are not in themselves sufficient to attain the specific noise abatement objectives for the airport. The proposed noise envelope has been assumed to be a noise related operating restriction under the Regulation.

3.1.8 GAL propose the following noise objective for the Project:

- The Project will:
 - 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;
 - Where possible, contribute to improvements to health and quality of life; and
 - provide certainty to the communities around Gatwick that noise will not exceed contour limits and will reduce over time,

consistent with the ICAO Balanced Approach.

3.1.9 The proposed noise envelope limits are as follows.

3.1.10 By the end of the first year after opening of the reconfigured northern runway pursuant to the Project, and thereafter, the area enclosed by the 92 day summer season average mode noise contours produced by the CAA shall not exceed the following:

- L_{eq} 16 hour day 51 dB: 146.7 km²
- L_{eq} 8 hour night 45 dB: 157.4 km²

3.1.11 By the end of the first year in which annual commercial ATMs exceed 382,000, and thereafter, the area enclosed by the 92 day summer season average mode noise contours produced by the CAA shall not exceed the following:

- L_{eq} 16 hour day 51 dB: 125.7 km²
- L_{eq} 8 hour night 45 dB: 136.1 km²

3.1.12 The area of the L_{eq} day and night contours will not exceed the limits above, and the noise envelope would provide certainty to the community that noise levels will be limited and will reduce in the future as the airport grows so as to share the benefits of that growth and new technologies with the community.

3.1.13 GAL will report on performance within the noise envelope annually and set in place internal management processes to forecast performance in the years ahead so as to pre-empt potential non-compliance and put in place operating practices and measures to reduce noise before an exceedance arises. Such measures would be subject to consultation with industry and community stakeholders if they trigger the requirements of Regulation (EU) 598/2014.

3.1.14 GAL seeks views from stakeholders on the proposed noise envelope for consideration as part of this consultation.

4 Regulation 598 Considerations

4.1 Introduction

4.1.1 Following the UK's exit from the EU, most EU Regulations relating to aviation have been adopted as UK law (so-called 'retained EU legislation'), subject to any minor amendments necessary to address the UK's sovereignty post-Brexit. This includes EU Regulation No 598/2014.²

4.1.2 Regulation 598 provides, where a noise problem has been identified, rules on 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 International Civil Aviation Organisation's (ICAO) Balanced Approach.

4.1.3 As it is considered the proposed noise envelope could represent a noise operating restriction under the Regulation, a review of the proposal in accordance with Regulation 598 and its Annexes has been undertaken. The paragraphs below explain how we have taken these requirements into account.

4.1.4 The stated objectives of the Regulations are:

- to facilitate the achievement of specific noise abatement objectives, including health aspects, at the level of individual airports, while respecting relevant legislation within the United Kingdom; and
- to enable the use of operating restrictions in accordance with the Balanced Approach so as to achieve the sustainable development of the airport and air traffic management network capacity from a gate-to-gate perspective.

4.1.5 The way in which GAL manages noise at the airport following the "Balanced Approach" is discussed in Section 3 of Appendix 14.9.2. Within the Balanced Approach 'Operating Restrictions' are to be used only after all other measures have first been considered, and where those other measures are not in themselves sufficient to attain the specific noise abatement objectives for the airport.

4.1.6 The Regulations require that a Noise Objective is set for the airport. The noise objective for the Project is stated in Section 3 above.

4.1.7 The Regulations define Noise Related Actions and Operating Restrictions in Article 2 as follows.

'(5) 'noise-related action' means any measure that affects the noise climate around airports, for which the principles of the Balanced Approach apply, including other non-operational actions that can affect the number of people exposed to aircraft noise;

(6) 'operating restriction' means a noise-related action that limits access to or reduces the operational capacity

² Subject to minor interpretation modifications in the Airports (Noise-related Operating Restrictions) (England and Wales) Regulations 2018 and the Aviation Noise (Amendment) (EU Exit) Regulations 2019.

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.’

4.1.8 Paragraph 15 in the preamble to the Regulations clarifies that the implementation of the regulations:

‘...should not lead to delay in the implementation of operational measures which could immediately alleviate the noise impact without substantially affecting the operational capacity of an airport. Such measures should therefore not be considered to constitute new operating restrictions’.

4.1.9 The Regulations apply to noise abatement measures that are operating restrictions where they limit access to or reduce the operational capacity of an airport, not to all noise related actions.

4.1.10 The DfT’s Night Flight Restrictions include seasonal limits of ATMs and Quota Counts and thus limit airport capacity at night. They are therefore existing operating restrictions for the purpose of Regulation 598.

4.1.11 The wide range of other noise abatement measures currently adopted at Gatwick and described in Section 3 of Appendix 14.9.2 – including the proposals for revised and lowered departure noise limits - do not limit access to or the operational capacity of the airport in the view of the author. These are not considered to be operating restrictions but rather noise related actions without substantive implications on capacity or operations.

4.2 Noise Assessment

4.2.1 Where an operating restriction is proposed, the Regulations require a noise assessment and consultation with relevant stakeholders who may be affected by it. This PEIR provides that assessment for consultees to consider. The section below describes the assessment that has been carried out with

reference to the requirements of the Regulations, followed by a description of how GAL will take account of feedback from this consultation on the noise envelope proposal ahead of submitting the application for development consent.

4.2.2 The requirements of a noise assessment where an operating restriction is proposed are laid out in Article 6 and the two annexes of the Regulations. Annex 1 of the Regulations requires noise impacts to be described using L_{den} and L_{night} metrics at the least but states that additional noise indicators which have an objective basis may be used. Annex 2 provides for a methodology to assess the cost-effectiveness of proposed noise related operating restrictions.

4.2.3 As the PEIR uses L_{eq}³ day and night metrics it is proposed that the noise envelope should be based on these metrics, however, for the purposes of the consultation under the Regulations L_{den} and L_{night} contours have also been included to further describe impacts. Both L_{eq} and L_{den} average noise exposure over time: for L_{eq} this is a 92 day period in the summer; for L_{den} and L_{night} noise exposure is averaged over the calendar year.

4.2.4 The effects of the Project have been assessed by comparing the predicted noise levels with the Project against the current and future baseline noise levels in the absence of the Project. The assessment considers two future aircraft fleets referred to as the ‘central case’ fleet and ‘slower transition case’ fleet, reflecting both the likely and a slower rate of fleet transition expected in the future.

4.2.5 The rate of fleet transition in the central case reflects GAL’s expectations of fleet improvement based on pre-Covid market trends, taking into account airlines’ fleet procurement programmes and business models. The slower transition fleet supposes the rate of fleet transition is delayed by about five years. This allows for any uncertainty brought by Covid or other disruption within the period which could affect airline fleet procurement plans (and are outside of GAL’s control).

4.2.6 The fleet transition programmes in the central case and slower transition case are summarised in Table 4.2.1 which gives the

forecast percentage of Next Generation aircraft in each assessment year under the two fleet transition scenarios.

4.2.7 The central case fleet forecast anticipates that between 2019 and 2032 airline investment will increase the proportion of quieter next generation aircraft in the Gatwick fleet from 13% to 82%, and to 100% by 2038.

Table 4.2.1: Future Fleet Compositions

Year	Central Case Fleet % Next Generation Aircraft	Slower Transition Case Fleet % Next Generation Aircraft
2019	13%	13%
2029	59%	40%
2032	82%	50%
2038	100%	82%

4.2.8 For the slower transition fleet, the effect of the 5 year delay is that by 2032 some 50% of the aircraft operating are future generation types increasing to 82% by 2038.

4.2.9 The slower transition fleet therefore still builds in some assumptions that the noisiest aircraft currently flying at Gatwick are phased out by the point the northern runway opens and that substantial investment in next generation aircraft will occur. For example, in 2019, around 2% of the Gatwick fleet did not meet the ICAO Chapter 4 noise standard, however, these aircraft produce the highest individual noise levels and make a disproportionate contribution to the contour area. Therefore, the expected removal by airlines of a proportion of these aircraft will deliver a significant improvement in the noise environment.

4.2.10 UK Government research⁴ has shown that whether or not people think an airport is going to get noisier has a significant influence on how annoying they find it today. The research found that this expectation factor (referred to as a non-acoustic factor) alone changed the proportion of the population highly annoyed by 30-50%. Thus, there is strong evidence that providing the communities affected by noise with certainty over future noise levels, will reduce community annoyance.

³ In the UK the metric LAeq is used to assess the effects of air noise in terms of health and quality of life in Environmental Impact Assessment. This followed extensive Government research that no other metric correlated better with predicting community annoyance.

⁴ Survey of noise attitudes 2014: Aircraft CAP 1506

- 4.2.11 Whilst the central case fleet is considered most likely to occur, the slower transition fleet could still occur together with higher traffic throughput, and therefore measures are proposed to ensure that effects do not exceed those assessed for this fleet so as to meet the Project noise abatement objective.
- 4.2.12 Gatwick has applied the balanced approach process to evaluate the available noise related actions.
- 4.2.13 Land use planning in the UK is focused on avoiding noise sensitive development being consented in areas of high noise unless mitigation can be provided to avoid significant effects. Land use planning is the responsibility of the local planning authorities around Gatwick and derives from Government planning policy. Planning policies adopted by local planning authorities may limit development within Gatwick's contours but that is not within Gatwick's control. It is not considered that the policies adopted by local planning authorities around Gatwick are likely to restrict development and population increase over the wider area between the 63 the 51 dB $L_{Aeq, 16\text{ hr}}$ contours. Thus, land use planning policy, in itself, is unlikely to meet the Project noise abatement objective. This is notwithstanding that Gatwick is proposing a tiered noise insulation scheme which will be amongst the most generous in the UK.
- 4.2.14 The ongoing noise abatement measures adopted by the airport are summarised in Section 14.8 of Chapter 14 and Section 3 of Appendix 14.9.2 and are included in the base case noise modelling for each of the 2019 base and future assessment years. Whilst this suite of noise related actions will reduce noise impacts in the future, depending on the rate of fleet transition, and other factors, they may not in themselves prevent noise impacts greater than that modelled in the "slower transition" case.
- 4.2.15 Thus, a noise envelope is proposed to provide certainty that noise levels in the future are not worse than those arising from the slower transition fleet.
- 4.2.16 A series of noise envelope options have been reviewed as discussed earlier in this appendix. Overall, a noise envelope based on limiting potential exposure was considered to be the most appropriate option, best aligned with the Project's noise objective and in a cost-effective manner.
- 4.2.17 The noise envelope proposed is based on the day and night time L_{eq} contour areas for the slower transition fleet and two points relating to air transport movement throughputs, when the maximum noise contour is likely to occur, and a smaller noise contour when the development is fully built out to apply

thereafter. It will limit noise exposure around Gatwick to, at the least, the area of the slower fleet transition contour.

- 4.2.18 The envelope proposed will not have any adverse consequences for safety, or unintended operational or environmental impacts.
- 4.2.19 The envelope provides an incentive to Gatwick to ensure in turn that its airline partners remain incentivised to continue investment so as to avoid more onerous interventions being required. Without the envelope, the impact of the Project could be higher, and a greater level of intervention would be required to avoid significant effects. The envelope will therefore provide certainty to the public that effects will be limited and that noise levels would have to reduce for the airport to be able to handle the ATM throughput forecast when the development is fully built out.

4.3 Consultation and next steps

- 4.3.1 As described in Section 2 above, GAL has developed the noise envelope taking account of the local situation at Gatwick. GAL will consult with all interested parties on the noise envelope proposal in this PEIR and will take account of feedback before submitting the noise envelope proposal within the application for development consent.
- 4.3.2 The Secretary of State for Transport is the Competent Authority for Regulation 598 and hence responsible for ensuring that the balanced approach has been followed prior to the introduction of any operating restrictions. The Secretary of State will be ultimately responsible for determining the application for development consent with the benefit of a recommendation from the Examining Authority.

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