

NOISE ACTION PLAN 2019-2023

ADOPTED AND APPROVED BY THE SECRETARY OF STATE
FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS –
FEBRUARY 2019



Heathrow



CONTENTS

1	Foreword.....	4
2	Purpose and scope	7
3	Description of Heathrow Airport	11
4	Background to noise and regulation	15
5	Heathrow’s framework for noise management	25
6	Results of the 2016 Noise Mapping	35
7	Developing the Noise Action Plan	39
8	Our approach to managing noise (the Noise Action Plan)	41
9	Evaluating the implementation and the results of the Noise Action Plan	49
Figures		
	Figure 4.1 Heathrow Airport’s aircraft noise regulation and controls	18
	Figure 5.1 Framework for noise management.....	25
	Figure 5.2 Heathrow Airport’s noise management and control measures currently in place	26
Tables		
	Table 4.1 Strength of evidence for health and quality of life effects from environmental noise	16
	Table 5.1 Qualification criteria for noise categories	27
	Table 5.2 Range of current operating procedures	28
	Table 5.3 Range of schemes that Heathrow currently offers	29
	Table 5.4 Heathrow’s stakeholder engagement forums and industry groups.....	32
	Table 6.1 Comparison of 2018 predictions with 2016 outcomes.....	36
	Table 6.2 Highlights of noise outcomes after second Noise Action Plan	36 & 37
	Table 9.1 Key performance indicators.....	50

Noise Action Plan 2019-2023. First edition printed 2019.
For updates please visit our website www.heathrow.com/noise



1 FOREWORD

Heathrow brings huge economic benefits both locally and nationally – as one of the largest single-site workplaces in the UK, Heathrow is proud to provide the workplace for over 76,000 people, over half of whom live in Heathrow's five local boroughs. Nationally, Heathrow is the UK's global gateway and plays a big role in underpinning the UK's economic success, connecting regions across the country to over 180 destinations in 85 countries.

But for all the benefits that Heathrow delivers, we know that aircraft noise remains an issue for those living around the airport. That's why we strive to work together with our airlines, NATS (our air traffic controllers), the Government and the communities themselves to manage and reduce the effects of aircraft noise. These measures are set out in our Noise Action Plan which we publish every five years.

The plan which follows is now the third Noise Action Plan Heathrow has produced. It demonstrates the progress we have made in seeking to remain a global leader in noise management and delivering against initiatives which reduce the impact of aircraft noise.

Since our last published action plan in 2013, we have made solid progress against the actions we set out to achieve. This includes:

- The launch of our Fly Quiet and Green league table in 2013 which has been incentivising airlines to use their quietest aircraft and best operational practices.
- The noisiest Chapter 3 aircraft are on the verge of no longer being in operation at Heathrow and Chapter 14, the quietest aircraft category, has already reached 60.8% of movements.
- A considerable effort that has seen a reduction in the number of late running departures.
- An investment in 52 new noise monitors with a direct data feed to the WebTrak flight information website.
- The new xPlane web tool, a world first, that enables community members to analyse overhead flights by aircraft type, movement type and height.
- The new features in WebTrak including a rainfall map layer and the introduction of a Noise Preferential Route map layer to improve transparency on disruptions and flight track performance.
- Trials of steeper climb, slightly steeper approaches and the detection of landing gear deployment.

- Improved ventilation facilities at our local schools, building on from our window and Adobe building programmes.
- The establishment of the Heathrow Strategic Noise Advisory Group and the Heathrow Community Noise Forum, which play key roles in bringing together industry and local stakeholders to help shape Heathrow's approach to noise management.

Heathrow has long been at the forefront of international efforts to address aircraft noise and we know we must continue to build on this. We are

proud of the fact that, despite the number of aircraft movements at the airport going up, our noise footprint has shrunk considerably over the past few decades and is at the smallest it has ever been. This trend has continued over the last 10 years since the action planning process required under EU Directive 2002/49 has been in place. In 2006 the area of our 55dBA L_{den} contour was 245 km² and by 2016 this had reduced by 19% to 198 km².

To continue to drive improvements over the next five years, here are some key actions we will be working on:

KEY AREAS OF DEVELOPMENT	ACTIONS
Continuing to drive operational performance standards and procedures	2.1 through 2.11
Working with airline and NATS colleagues to implement our Quiet Night Charter	4.2
Supporting the Heathrow Community Noise Forum with an independent advisor	5.3
Working with local governments on local planning principles and encroachment policy	3.6 and 3.8
Conducting a review of our charging structure that provides incentives to our airlines and takes account of CAA recommendations in this area	1.4
Developing a new noise insulation strategy	3.3
Preparing an annual five-year noise contour forecast with an analysis of impacts on health and well-being	5.11
Further enhancing our communication tools and data and complaints management, as well as investigating new methods of detecting and communicating changes to operations that might impact residents.	5.1, 5.2, 5.8 and 5.16
Supporting and encouraging independent research to enhance our understanding of how aviation affects and can improve quality of life and health outcomes near our airport	5.13

This plan goes beyond the requirements of European legislation by including actions which will manage both ground and air noise for affected communities. It includes new commitments which are part of our sustainability leadership plan 'Heathrow 2.0' and will see us continue to deliver progress in this key area.

We look forward to working closely with our local communities, airlines, NATS and policy makers to deliver our new Noise Action Plan that continues to build on our efforts to reduce the impact of noise from our operations.



John Holland-Kaye

John Holland-Kaye
Chief Executive, Heathrow Airport Limited



2 PURPOSE AND SCOPE

Purpose

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 Noise Action Plan, which for Heathrow airport, is Heathrow Airport Limited (HAL). The final adoption and approval of the Noise Action Plan is undertaken by the Secretary of State for the Department of Environment, 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”. (See legal context page 17.)

Heathrow has made significant progress in addressing the noise challenge but we recognise that Heathrow’s operations do result in noise impacts for our local communities. This document sets out how we plan to manage, and where possible reduce, the impact of aircraft noise. However, in some cases responsibilities for noise management fall to the DfT, NATS or CAA, so in those cases we are committed to recommending and seeking to influence proposed changes. The DfT’s Air Navigation Guidance 2017, available on the government website, sets out the roles and responsibilities of all bodies that have a role in managing aviation noise.

Our first Noise Action Plan covered the period 2010 to 2015 and our second, 2013 to 2018. This is our third Noise Action Plan and it covers the period 2019 to 2023. It has been compiled in line with DEFRA’s 2017 guidance (see Annex 2) and the main actions (Section 8) have been developed in dialogue with various groups including the Heathrow Community Noise Forum (HCNF).

Scope

In accordance with the requirements of the EU Noise Directive 2002/49/EC, this action plan makes reference to L_{den} noise contours calculated on a decibel (dB) scale for 2016 operations. They were produced by the Environment Research Consultancy Department (ERCD) of the CAA using the UK civil aviation noise model ANCON (version 2.3) and were published for Heathrow airport in 2017. The contours are shown in Annex 11.

Through the actions set out in this plan, we will seek to manage aircraft noise from Heathrow’s operation. **It is important to note that this Noise Action Plan only includes actions related to developments for which the airport has been granted planning permission and intends to take forward at the time of publication.**

This Noise Action Plan does not therefore include a mitigation strategy or specific actions to deal with any new infrastructure or planned and permanent airspace changes.

Specifically, this means that this Noise Action Plan applies only to operations within the current 480,000 annual movement limit on the existing two-runway system. It does not cover any expansion at Heathrow. As we consider major changes or development proposals that will affect the noise environment, we will review our plan with input from the Heathrow Community Engagement Board (HCEB), Heathrow Strategic Noise Advisory Group (HSNAG), the Heathrow Community Noise Forum (HCNF) and other relevant stakeholders.

The legal requirement is for Heathrow Airport Limited 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.

We have extended the scope of this plan by giving consideration to actions which 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.



A GREAT PLACE TO LIVE

- ★ As part of our Quiet Night Charter, by 2022 **we will seek to at least halve the number of flights on non-disrupted days that operate late after 23:30**
- ★ **Airside ultra-low emissions zone by 2025** to improve quality of life through cleaner air
- ★ **50% airport passenger journeys made by public and sustainable transport by 2030**, supporting no more airport-related cars on the road, so local areas can thrive without increased congestion

The Noise Action Plan also aligns with Heathrow 2.0, our sustainability leadership plan which was launched in 2017 and sets out a clear sustainability vision and goals for Heathrow. Within the pillar “A Great Place to Live”, Section 4 is called “Respite for Residents – A place that is getting quieter” and contains three headline goals that broadly reflect the five groups of actions in this plan.

- Encourage the use of the quietest aircraft available, operated with the least noise impact practicable, within an agreed noise envelope.
- Influence national and international policy and engage with local planning authorities to ensure more effective land planning processes in noise affected areas, and to improve our noise mitigation.
- Continue to improve the relationship with our local community by working more transparently and collaboratively to develop noise action plans, as well as improving our communications, monitoring and research capability.

The Noise Action Plan does not include noise from non-aircraft sources such as 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.

For information, please see www.noisemapping.defra.gov.uk

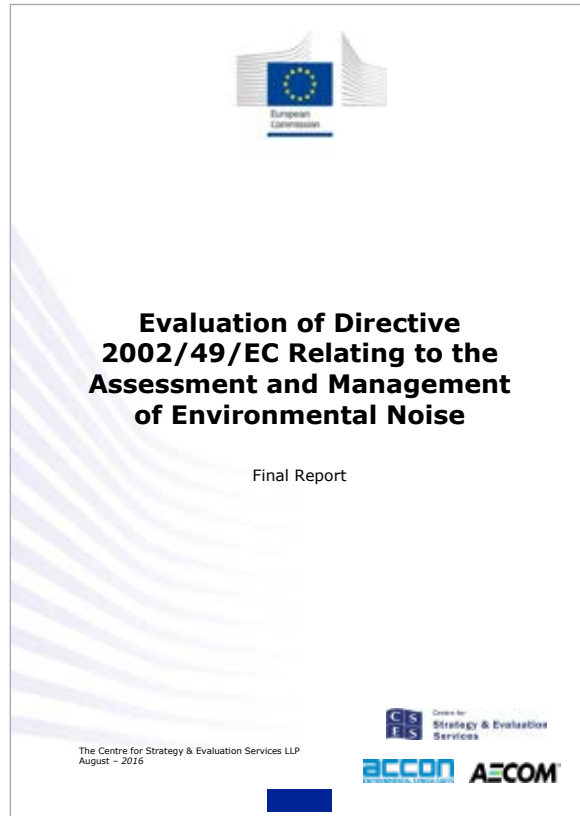
New noise from sources associated with any expansion of the airport would also be addressed through the planning and consenting process.

Brexit

In June 2016, the UK voted to leave the European Union. In March 2017, the UK triggered Article 50 setting a course for leaving the EU in 2019. At the time of writing, uncertainty remains as to the nature of the future relationship between the UK and the EU.

It should be noted that Heathrow, when developing its Noise Action Plans, strives to exceed the minimum requirements of the Environmental Noise Directive (END). For example, since 2009 we have calculated and published Lden and Lnight noise contours annually, rather than only every 5 years. In addition, given its importance to local residents, we have included the management of ground-based noise sources in our plan.

Regardless of the status of the UK's position in relation to future compliance with the EU Noise Directive 2002/49/EC in the coming years, Heathrow is supportive of the Noise Action Plan process and the concept of a single strategic document collating aircraft noise management commitments and initiatives. As a result of this support Heathrow is committed to continuing to coordinate the management of aircraft noise in this way even if the Environmental Noise (England) Regulations 2006 (which transpose the EU Noise Directive) are ultimately repealed.





3 DESCRIPTION OF HEATHROW AIRPORT

Heathrow has two runways, four passenger terminals and one cargo terminal with two aprons. The airport is located approximately 21 km (13 miles) west of the city of London. Surrounding the airport are a mixture of suburban housing, business premises, open land and infrastructure including three large reservoirs to the west. In 2017, there were just under 476,000 aircraft movements handling around 78 million passengers.

Planned development 2019-2023 and beyond

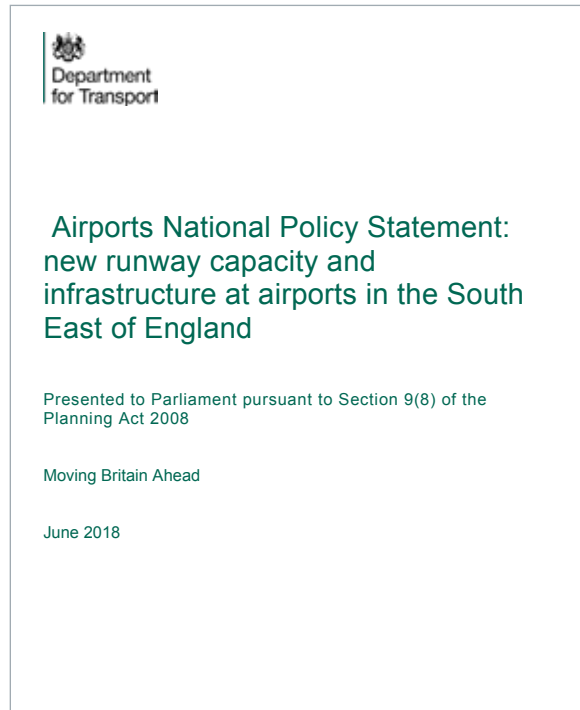
Outlined below are development and expansion activities planned during the lifetime of this Noise Action Plan.

Capital investment plan

During the next five years, there are several development proposals at Heathrow mostly relating to the existing terminal buildings that are in the early stages of planning and development. One proposal is considering how to maximise the passenger throughput of the Terminal 5 campus that may involve some infrastructure development such as the extension of the satellite buildings. Another possibility called Terminal 2A Phase 2 could expand Terminal 2.

These works could take place within existing planning permissions and the annual 480,000 ATM cap and is not major development expected to affect the noise situation at the airport, and therefore these would not trigger a need to update and re-issue this Noise Action Plan.

Heathrow Expansion



On 26 June 2018, the Airports National Policy Statement: new runway capacity and infrastructure at airports in the South East of England (the ANPS) was formally designated by the Secretary of State for Transport following a House of Commons vote in favour of the policy. The ANPS provides policy support for the expansion of Heathrow Airport and the construction of a third runway to the north west of the existing airport. To obtain planning permission for the final scheme, we must now make an application for a Development Consent Order (DCO) under the Planning Act 2008. We plan to submit our DCO application in 2020, following further consultation with local communities and stakeholders. This would allow the start of construction in 2021 and a new runway to open in 2026.

As an interim measure between DCO approval and the new runway opening, we are considering an option to raise the 480,000 ATM limit by 25,000. We also propose to include plans in our DCO application for constructing the taxiways required to enable full easterly alternation following the ending of the Cranford Agreement¹.

¹ <https://www.heathrow.com/noise/heathrow-operations/cranford-agreement>



As explained on page 7, this Noise Action Plan does not cover the proposed expansion of the airport, the proposed raising of the ATM limit or the modification of taxiways on the existing northern runway to enable easterly alternation. In the event of approval of any major development occurring which affects the existing noise situation, this Noise Action Plan would be reviewed and reissued to take any new noise mitigation measures into account.

Airspace change and future airspace strategy

Much of the UK's airspace has barely changed since the 1960s, yet we have twice as many aircraft in the skies. The airspace was designed for an age when aircraft were fewer and less efficient, and navigation was much less sophisticated. For these reasons, the UK's entire airspace needs to be brought up to date – that is why the Government has embarked on its "Future Airspace Strategy" (FAS) to modernise the UK's airspace.

The aim of the strategy is to make the airspace more efficient; improve punctuality; cut carbon dioxide emissions; reduce noise from less aircraft-holding at low levels; and to ensure there is capacity to meet future demand. The FAS will require all UK airports to modernise, as well as the network that sits above these airports which is known as en-route airspace. FAS is also part of a Europe-wide

modernisation project, called the Single European Sky, to make the skies above Europe more efficient.

Even without a new runway, a redesigned airspace at Heathrow is required to accommodate new satellite-based Performance Based Navigation (PBN) as well as changes required for the efficient operation of a two-runway Heathrow.

For any airspace change the appropriate sponsor must follow the process in CAP1616 Airspace Design: Guidance on the regulatory process for changing airspace design including community engagement requirements.

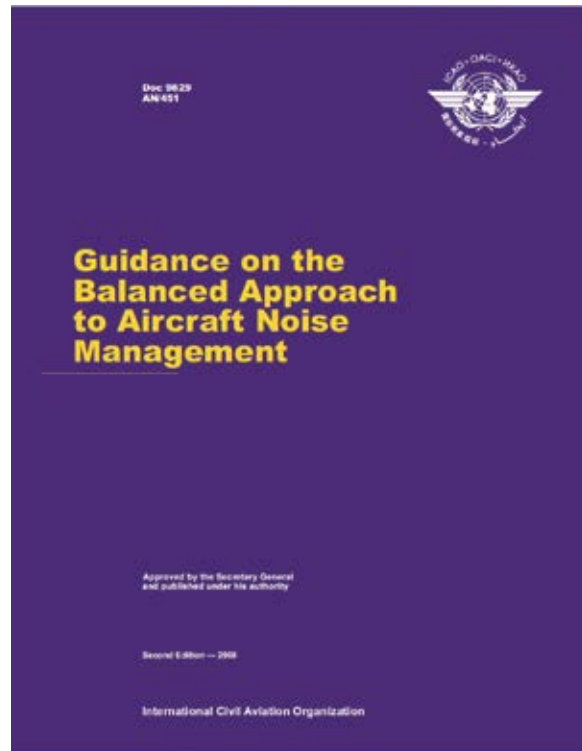
Similarly, in the event of the approval of any airspace change which affects the existing noise situation, this Noise Action Plan would be reviewed and reissued to take any new noise mitigation measures into account.

Long-term noise strategy

Heathrow's long-term noise strategy has been in place for many years now and is essentially based on ICAO's Balanced Approach with the addition of a "Working with Communities" pillar. This approach is not expected to change in the long-term. Section 4 of this document sets out the regulatory regime under which Heathrow manages noise and Section 5 sets out in a little more detail Heathrow's noise management framework.

Our sustainability leadership plan, Heathrow 2.0, mentioned in Section 2, sets out Heathrow's ambition towards a future of sustainable aviation. At the heart of our ambition within Heathrow 2.0 is our commitment to manage and where possible reduce our noise impacts. We expect a number of key areas of activity to be central to not only this Noise Action Plan but future iterations. These include the following:

- On-going modernisation of the fleet and incentives to use aircraft with the newest noise reduction technologies.
- Investigation and appropriate implementation of effective noise abatement procedures.
- Airspace design and management to minimise adverse noise impacts and, where appropriate, to maximise respite for residents.
- Provision of a comprehensive sound insulation scheme for the most affected houses and schools.
- Continual improvement of voluntary measures especially for reducing the impacts of night operations.
- Enhanced monitoring, reporting and management of all ground- and air-based noise sources.
- Clear and transparent engagement with community groups and industry stakeholders to achieve collaborative and beneficial improvements.
- Promotion of a research agenda that enhances our understanding of the impacts of aviation and the effectiveness of the interventions used to reduce noise impacts.





4 BACKGROUND TO NOISE AND REGULATION

Aircraft noise

Noise is created by aircraft approaching or taking off from airports and by taxiing aircraft and engine testing within the airport perimeter.

Airframe noise results when air passes over the aircraft's body (the fuselage) and its wings. This causes friction and turbulence, which make noise. The amount of noise created varies according to the way the plane is flown, even for identical aircraft. Aircraft land with their flaps extended and this creates more friction (and produces more noise) than a plane with its flaps up.

Engine noise is created by the sound from the moving parts of the engine and by the sound of the air being expelled at high speed once it has passed through the engine. Most of the engine noise comes from the exhaust or jet behind the engine as it mixes with the air around it, although fan and combustor noise from the front of the engine can also be audible on the ground.

Aircraft manufactured today are much quieter than they were 30 or even 20 years ago and this trend is expected to continue as even quieter aircraft are introduced in the future. As a result, even though the number of aircraft movements over the past decade has been relatively stable, the airport noise contours have continued to reduce in area.

Measuring and reporting noise

For many communities, aircraft noise is a series of discrete noise events of no longer than one to two minutes duration, varying in noise level and frequency of occurrence, and spaced out over a part or all of a day, with daily, weekly and monthly variation. Consequently, measuring noise, describing its impacts and describing change are inherently complex. Any attempt to define and measure noise and change has its limitations and cannot fully capture the spectrum of personal experiences of noise. Furthermore, there are many subjective effects such as perception, attitude and visual impact – collectively these are sometimes labelled “non-acoustic factors”. Nevertheless, seeking to quantify noise with objective metrics is essential for any efforts to manage the noise challenge.

There are a range of metrics which are used to describe aircraft noise and inform policy. The most common international measure of noise is the L_{Aeq} (often shortened to L_{eq}) which means ‘equivalent

continuous noise level.’ Most policy is based on the L_{eq} metric because, based on current research, it has proven to have the best correlation with associated health outcomes such as annoyance and sleep disturbance. See Table 4.1 below.

In the UK, daytime aircraft noise is typically measured by calculating this average noise level in decibels (dB) over 16 hours (07:00-23:00) during the summer period to give a single daily figure. As these L_{eq} 16hr contours have been used in the UK for over 30 years, they allow historic trends to be monitored.

In 2002 the EU Environmental Noise Directive (END) provided a standardised means for mapping and assessing road, rail and air transport noise across Europe. Member states are required to develop strategic noise maps every five years based on the metric L_{den} and submit Noise Action Plans detailing how the identified noise problems are to be managed and mitigated over the five-year period. Like L_{eq} , the noise metric L_{den} is also a time-averaged noise metric with penalty weightings for noise in the evening (19:00-23:00) and night (23:00-07:00) periods.

Noting that research on health impacts is usually based on L_{eq} metrics, we acknowledge, however, that most people struggle to understand how the concept of ‘average noise over a day’ relates to their own individual experience. We have been working for a number of years, and most recently through the Heathrow Community Noise Forum, to expand the use of supplementary and event-based metrics that better reflect individual experiences of noise following feedback from community members. The outcomes of this work can be seen in our recent annual Noise Contour Report (2016) which presents data with a wide range of historic and new metrics, as well as our Community Noise Information Reports from the new noise monitors located in community areas.

These reports include the longstanding average noise level metrics but are supplemented by other noise metrics that reflect the number of aircraft noise events above a specific sound level (e.g. 65dBA L_{max}), as well as westerly and easterly only contours, and other information such as overflight maps and flight path usage statistics. The Noise Contour Report can be found at https://www.heathrow.com/file_source/HeathrowNoise/Static/Heathrow_NAP_Contours_2016_and_Summer_Contours_2016.pdf

4 BACKGROUND TO NOISE AND REGULATION

Presented in a format developed in conjunction with the HCNF in 2017, the Community Noise Information Reports presents data from new noise monitors located in community locations and include time-averaged and event-based noise metrics. The reports are available at <https://www.heathrow.com/noise/reports-and-statistics/reports/community-noise-reports>.

Effects of noise

Noise can have a significant and disruptive effect on everyday life. There are many different effects and sources of noise and individuals experience each of them to varying degrees.

Heathrow has conducted a literature review of published, peer-reviewed scientific papers that have been written by recognised experts in noise and its effects on health and quality of life from across the world. This review evaluated the strength of evidence for noise effects from different noise

sources including aircraft, road traffic, railways, construction and cumulative/combined noise. The key health and quality of life effects considered are summarised in Table 4.1, along with the strength of evidence for that effect associated with aircraft noise. It can be noted that whilst noise might negatively impact on some health outcomes and determinants, Government policy also acknowledges the potential health benefits of aviation, such as the impact of aviation on the health determinants of employment, income and education in the population.

The Government continues to research the effects of noise on human health and Heathrow supports the desire to understand these effects better. We recognise that human response to noise is extremely complex and varies between people and places and is influenced by many non-acoustic factors. We will continue to monitor Government research in these areas.

EFFECT	SPECIFIC OUTCOMES	KEY METRICS USED	CURRENT STRENGTH OF THE EVIDENCE
Cardiovascular	Hypertension Coronary Heart Disease (CHD) Acute Myocardial Infarction (AMI) Stroke	L_{den} , L_{eq} 16hr and L_{eq} 24hr	Sufficient
Self-reported sleep disturbance	Interference with falling asleep Awakening/Interference with staying asleep	L_{night} and L_{max}	Sufficient
Objective sleep disturbance	Awakenings	L_{night} and L_{max}	Sufficient
Cognitive development	Reading Standardised test scores	L_{eq} , L_{den} and, for a few studies, L_{max}	Sufficient
Annoyance	Bothered, disturbed or annoyed by noise at home	L_{eq} 24hr, L_{den} and L_{dn}	Sufficient
Hearing impairment	Loss in hearing	L_{eq} 8hr (individual exposure)	None at <75dB(A)
Mental health, wellbeing and quality of life	Wellbeing Quality of life Psychological symptoms Psychological illnesses e.g. depression, anxiety Medication for psychological illnesses	L_{eq} 8hr (individual exposure) L_{eq} 16hr and L_{eq} 8hr	Inconclusive

Table 4.1 Strength of evidence for health and quality of life effects from environmental noise

Interdependencies

Noise & emissions

There are interdependencies between the noise produced by aircraft, the emission of local air pollutants from aircraft engines and the emission of carbon dioxide (CO₂) from aircraft engines. Finding the right balance can 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 CO₂ emissions but a few cases have resulted in a less optimal performance in emissions of local air pollutants such as oxides of nitrogen (NO_x).

There are many factors that will influence the design of aircraft and engines and the challenge for the aviation industry is to address these 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 30% or more in some cases compared to a full thrust setting. Many airlines already employ 'reduced thrust' as their standard operating procedure. Whilst this is beneficial in the immediate vicinity of the airport, there can be a small increase in the noise experienced by those further away from the airport under the departure flight path as the aircraft decreases its angle of ascent.

We have long been aware of the interdependencies between noise, local air quality and CO₂ emissions and have undertaken a number of studies to help quantify the exact balance that needs to be struck for specific situations. The level of scientific understanding of interdependencies is however constantly evolving and Heathrow continues to promote further research.

Similarly, there can be more subtle noise distribution interdependencies. With steeper climb rates, aircraft will be higher along their flight path and this can reduce noise for communities further from the airport, but it can increase noise for communities nearer to the airport. Furthermore, some procedures can decrease noise directly below a flight track but increase noise received at sideline locations. At Heathrow, we are conducting a study on the effects of these steeper climbs and we have deployed almost 20 new monitors to measure centreline and sideline noise. This will inform Heathrow's future strategy on airspace design.

The legal context – regulation of aircraft noise in the UK

There are three main tiers of regulation which govern aircraft noise in the UK: International, European and National. Local controls could be considered as a fourth tier. Figure 4.1 below demonstrates the hierarchy.

International regulation

The International Civil Aviation Organisation (ICAO) is a specialised agency of the United Nations, created to promote the safe and orderly development of international civil aviation throughout the world. It sets standards and recommended practices necessary for aviation safety, security, efficiency and regularity, as well as for aviation environmental protection. After a standard is adopted it is put into effect by each ICAO member state in its own territories.

Noise certification standards

ICAO has set progressively tighter certification standards for noise emissions from civil aircraft. Aircraft operating in member states must conform to these standards, which are known as 'Chapters.' The Chapters set maximum acceptable noise levels for different aircraft at three specific locations during landing and take-off.

The first aircraft noise standard, Chapter 2, was introduced in 1973 and aircraft in this category have been banned from operating within the EU since 1 April 2002, unless they are granted specific exemptions. Chapter 3, 4 and 14 categories were introduced in the years 1977, 2001 and 2013, respectively.

Since 2006, all new aircraft types have had to meet the requirements of Chapter 4, which were set at 10 decibels below that of Chapter 3 (cumulative of the margins at the three assessment points).

The latest noise standard Chapter 14 was agreed in 2013. This increased stringency by 7 decibels (cumulative margin) relative to Chapter 4 levels and became effective (for large aircraft) from 31 December 2017. As with the Chapter 4 standard, Heathrow supported efforts for an even more stringent level, however we welcome the continuous improvement the new standard secures.

The vast majority of civil aircraft now operating fall within Chapters 4 and 14. As yet, there is no

4 BACKGROUND TO NOISE AND REGULATION

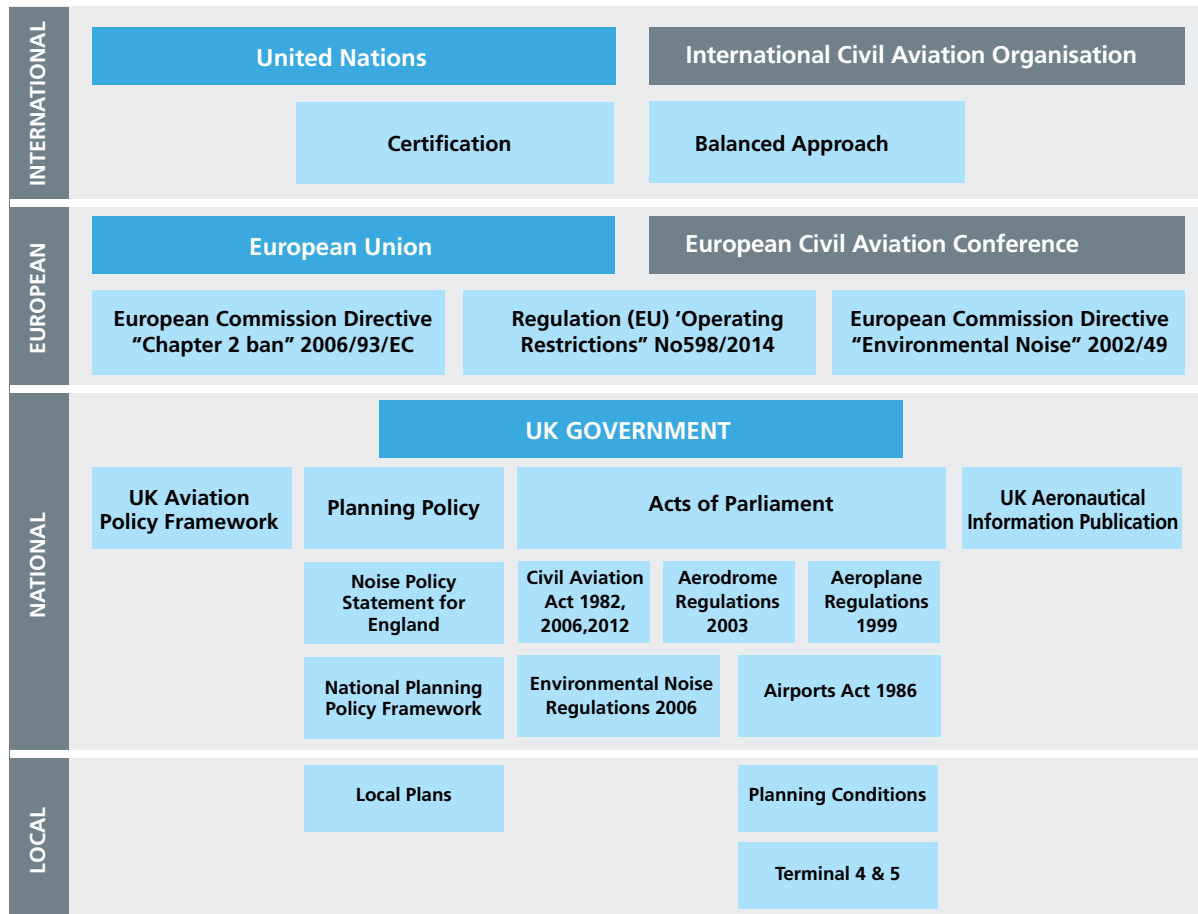


Figure 4.1 Heathrow Airport's aircraft noise regulation and controls

internationally agreed date for the phase-out of Chapter 3 aircraft, although Heathrow has set a voluntary target for all movements to be Chapter 4 or 14 compliant by 2020. (See Action 1.1)

Balanced Approach

In 2001 ICAO published the manual, *A Balanced Approach to Aircraft Noise Management*. Known as the 'Balanced Approach', it recommends identifying the noise problem at an airport and analysing the various measures available to reduce noise through the exploration of four principal elements, namely:

- reduction at source (quieter aircraft);
- land-use planning and management;
- noise abatement operational procedures (optimising how aircraft are flown and the routes they follow to limit the noise impacts); and
- operating restrictions (preventing certain noisier types of aircraft from flying at certain times or at any time).

With the goal of addressing the noise problem in the most cost-effective manner, ICAO has developed policies on each of these elements, as well as on noise charges.

This approach, together with our focus on improving communication and community engagement activities, forms the basis of our framework for noise management described in the next section.

European regulation

The EU works to define a common aviation policy in Europe. It has issued various regulations and directives relating to the management and control of environmental issues and is increasingly assuming responsibility for the regulation of aircraft noise standards. Member states are obliged to comply with the requirements of the regulations and directives and incorporate them into national legislation.

The regulations and directives of most relevance to aircraft noise are:

- 1 **EC Directive 92/14/EEC** replaced by EC Directive 2006/93/EC on the limitation of the operation of aeroplanes covered by Part II, Chapter 2, Volume 1 of Annex 16 to the Convention on International Civil Aviation, second edition (1988) – This directive banned Chapter 2 aircraft from landing in the EU from 1 April 2002.
- 2 **Regulation (EU) No598/2014** of the European Parliament and of the Council of 16 April 2014 on the establishment of rules and procedures regarding the introduction of noise-related operating restrictions at union airports within a Balanced Approach and repealing Directive 2002/30/EC. This ensures that the Balanced Approach is adopted in respect of aircraft noise management. It also sets out the definition of marginally compliant aircraft and the process to be followed in the implementation of an operating restriction which might restrict access to the airport. It requires that noise related operating restrictions cannot be introduced as a first resort - a range of other mitigation measures must be considered first. If a noise related operating restriction is considered necessary, it can only be imposed after the 'cost effectiveness' of the restriction has been considered.
- 3 **EC Directive 2002/49EC** (Environmental Noise Directive or 'END') – This directive required member states to create strategic noise maps from all transport sources (road, rail and air) in urban areas every five years and to adopt action plans to manage noise. The directive also aims to harmonise methods for measuring noise across the EU. It is under this directive that Heathrow has produced this Noise Action Plan.

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:

- 1 **The Civil Aviation Acts 1982, 2006, 2012**
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 Heathrow, Gatwick and Stansted.
These powers were widened by the Civil Aviation Act 2006. This 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. Information regarding Heathrow's financial incentives is available at www.heathrowairport.com/about-us/partners-and-suppliers/conditions-of-use

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 Heathrow, we use this power to fine airlines. This money has been used for projects in the local community including environmental and noise mitigation projects for local schools and community groups. In 2009 we launched a new large grants scheme for schools, charities and other local groups to bid for funds of up to £50,000 for community and environmental projects.

The Civil Aviation Act 2012 (the 'Act') was designed to modernise key elements of the regulatory framework for civil aviation in the UK and offers a package of reforms to make regulation, and the sanctions which support it, flexible, proportionate, targeted and effective.

- 2 **The Airports (Noise-related Operating Restrictions) (England and Wales) Regulations 2018** – These regulations came into force on 23 July 2018 and designate the UK's 'competent authorities' in relation to deciding upon and monitoring operating restrictions for the purposes of Regulation (EU) No598/2014. They also revoke the Aerodromes (Noise Restrictions) (Rules and Procedures) Regulations 2003 concerning the adoption of noise related operating restrictions. They require airport operators to provide the competent authority with any information that they may require to carry out their functions under Regulation (EU) No598/2014.
- 3 **The Environmental Noise (England) Regulations 2006** – 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

4 BACKGROUND TO NOISE AND REGULATION

maps and, under regulation 18, airport operators are obliged to produce Noise Action Plans based on the strategic noise maps. Once prepared and adopted, the Noise Action Plans must be reviewed and if necessary revised at least every five years and whenever a major development occurs affecting the noise situation. The regulations were amended in both 2008 and 2009.

4 Airports Act 1986 – This Act gives power to the Secretary of State to make orders if it appears 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.

5 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.

National regulation, controls and policy

Noise Policy Statement for England (NPSE)

The Noise Policy Statement for England (NPSE) was published by DEFRA in 2010 and is recognised through UK aviation noise policy. Its policy vision 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 vision is supported by three Noise Policy Aims:

“Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- **Aim 1:** *avoid significant adverse impacts on health and quality of life*

- **Aim 2:** *mitigate and minimise adverse impacts on health and quality of life, and*
- **Aim 3:** *where possible to contribute to the improvement of health and quality of life.”*

The NPSE refers to the established concept of the Lowest Observed Adverse Effect on health (LOAEL), which is the level above which adverse effects on health and quality of life can be detected. The Statement then extends this concept to introduce the definition of the Significant Observed Adverse Effect (SOAEL) as the level above which significant adverse effects on health and quality of life occur.

The NPSE does not stipulate the values of the LOAEL and SOAEL which can vary depending on noise source, receptor and time of day. This allows flexibility for different policy areas such as annoyance as opposed to impact on health indicators, and the ability to adapt policy in line with recent research.

Aviation Policy Framework (APF)

The UK government has an important role in setting and developing the policy framework for aircraft noise control at UK airports. In March 2013 the Government published its Aviation Policy Framework (APF) which sets out that aviation needs to grow delivering the benefits essential to our economic wellbeing, whilst respecting the environment and quality of life. It is underpinned by two core principles of collaboration and transparency. It aims for all stakeholders to work together to develop workable solutions based on clear and accessible information.

With respect to noise, the overall objective is to limit and, where possible, reduce the number of people in the UK significantly affected by aircraft noise. The APF also promotes cooperation with the objective to encourage the aviation industry and local stakeholders to strengthen and streamline the way in which they work together.

We fully support this framework and regard it as a foundation on which our actions can be based. We often go above and beyond the requirements set by Government, and are committed to working with them and with local communities to address the noise issue.

On land-use the Aviation Policy Framework (APF) “*recognises that land-use planning and management is one of the elements of the ICAO Balanced Approach which should be explored when tackling noise problems at an airport. In line*

with the Government's noise policy, the Government's National Planning Policy Framework (NPPF) says that planning policies and decisions should aim to avoid situations where noise gives rise to significant adverse impacts on health and quality of life as a result of new development, and to mitigate and reduce to a minimum, other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions."

The term "avoid" can include allowing dwellings in noise impacted areas that achieve suitable internal design noise levels.

The principal mitigation measure for aircraft noise impacts for new developments is the provision of acoustic insulation and can be required on a statutory basis under section 79 of the Civil Aviation Act 1982 at Heathrow. In practice however, all the airport's current noise insulation schemes are provided on a voluntary basis and meet the expectations of the APF.

The APF explains that 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.

The APF document also confirms that 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. This has now taken place via the ANPS.

The APF is expected to apply, as amended in part by the Consultation Response on UK Airspace Policy (Oct 2017) until Government publishes its Aviation Strategy in early 2019 (see 'Evolving Government Policy' below). Please note that these documents both address or will address noise insulation and compensation policy.

Planning policy – National Policy Planning Framework (NPPF)

Land-use planning can play an important role in reducing the impact of aircraft noise by restricting certain types of developments near airports like houses and schools. The revised National Policy Planning Framework (NPPF) came into force on

24 July 2018. This replaces the previous NPPF published in March 2012.

The NPPF sets out the Government's planning policies for England and how these are expected to be applied. It provides a framework within which local plans can be developed which reflect community needs.

The NPPF noise aims widely reflect those in the NPSE. In particular, the NPPF asks that planning policies and decisions should contribute to and enhance the natural and local environment by preventing new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability.

The NPPF also asks that planning policies and decisions ensure that new development is appropriate for its location. In doing so they should mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development and avoid noise giving rise to significant adverse impacts on health and the quality of life. The NPPF also aims to identify and protect tranquil areas which have remained relatively undisturbed by noise.

This does not explicitly prevent the construction of new dwellings or conversion of existing buildings. At the heart of the NPPF is a presumption in favour of sustainable development.

UK Air Navigation Guidance 2017

In October 2017, the Government published its Air Navigation Guidance on how the government will implement its environmental, airspace and noise management policies in relation to air navigation. The 2017 UK Air Navigation Guidance replaces the 2014 UK Air Navigation Guidance

The Air Navigation Guidance provides guidance to:

- the Civil Aviation Authority (CAA) on its environmental objectives when carrying out its air navigation functions; and
- the CAA and wider aviation industry on airspace and noise management, including in relation to the role of the Secretary of State in the UK's airspace change process.

It also includes a copy of the new air navigation directions issued to the CAA under the Transport Act 2000, The Civil Aviation Authority (Air Navigation) Directions 2017.

4 BACKGROUND TO NOISE AND REGULATION

Airports National Policy Statement

On 26 June 2018, the *Airports National Policy Statement: new runway capacity and infrastructure at airports in the south east of England* (the 'ANPS') was formally designated by the Secretary of State for Transport following a House of Commons vote in favour of the policy in Parliament.

The ANPS sets out:

- the need for additional airport capacity in the south-east of England;
- why government believes that need is best met by a north-west runway at Heathrow Airport;
- the specific requirements that a DCO application for a new north-west runway will need to meet to obtain consent.

The ANPS (including its proposals in relation to noise and compensation) will apply to a relevant application for development consent for expansion at Heathrow Airport made under the Planning Act 2008.

Evolving Government policy

Over the course of 2017 the Government consulted on aviation strategy, airspace policy and expansion in the south east. This consultation will have implications on the APF. When policies are adopted by the Government some sections of this Noise Action Plan may need to be updated. Our Actions 5.15 and 5.16 envisage annual reviews and progress updates of this Noise Action Plan.

Aviation Strategy

The Government is developing a new Aviation Strategy for the UK, which will set out the long term direction for aviation policy making to 2050 and beyond. The latest document "*Beyond the Horizon – The Future of UK Aviation – Next steps towards an Aviation Strategy*" (April 2018) states that Strategy will look at "*whether the right regulations, controls and incentives are in place to ensure the sector continues to address noise impacts as well as tackling air quality concerns*". Detailed policy proposals are expected to be published in a green paper in the autumn of 2018, followed by a final Aviation Strategy in early 2019.

Airspace Policy

In February 2017, the Government also consulted on its draft Airspace Policy. In October 2017, it published the document *Consultation Response on UK Airspace Policy: A framework for balanced*

decisions on the design and use of airspace (the Airspace Consultation Response) which sets out emerging government policy on related issues, including the following:

- changes to the noise compensation policy;
- the creation of an Independent Commission on Civil Aviation Noise (ICCAN);
- option analysis in airspace change;
- new metrics and appraisal guidance to assess noise impacts;
- use of a "tier" system for categorising airspace changes.

This Airspace Consultation Response states that the Government intends to make changes to the noise compensation policies contained in the 2013 APF via the new Aviation Strategy which, as noted above, is still being developed.

While the Airspace Consultation Response makes clear that the Government will undertake additional consideration of this issue in developing the Aviation Strategy, the 2013 APF and the Airspace Consultation Response together indicate that the Government will expect airport operators to:

- offer households exposed to levels of noise of 69dB L_{eq} 16hr or more, assistance with the costs of moving;
- offer full insulation to be paid by the airport for homes within the 69dB L_{eq} 16hr contour, where the home owners do not want to move (this is an additional requirement proposed in the 2017 draft Airspace Policy);
- offer acoustic insulation to noise-sensitive buildings, such as schools and hospitals, exposed to levels of noise of 63dB L_{eq} 16hr or more;
- where acoustic insulation cannot provide an appropriate or cost-effective solution, to offer alternative mitigation measures;
- offer financial assistance towards acoustic insulation to residential properties exposed to levels of noise of 63dB L_{eq} 16hr or more regardless of the type (infrastructure or airspace) or level of change (i.e. remove requirement for a minimum 3dB change) (as modified by the changes proposed in the 2017 draft Airspace Policy); and
- consider compensation for significantly increased overflight as a result of the change, based on appropriate metrics which could be decided upon according to local circumstances and the economics of the change proposal (this

is an additional requirement proposed in the 2017 draft Airspace Policy);

Heathrow is committed to working with the Government and Local Authorities to take into account the principles of the NPSE, NPPF, the ICAO Balanced Approach and other emerging aviation policy when it is finalised. We also aim to work closely with local authorities on the development of their Local Plans.

Other

Professional Practice Guidance on Planning & Noise

In 2017 the Association of Noise Consultants (ANC), the Institute of Acoustics (IOA) and Chartered Institute of Environmental Health (CIEH) published a jointly-produced document, *The Professional Practice Guidance on Planning & Noise* (ProPG).

The new guidance is a blueprint for acoustic practitioners, council planners and developers and aims to protect home dwellers from noise by putting good acoustic design at the heart of all new residential development. The three organisations say that if their recommendations are followed early in the planning process:

- 1 good acoustic design will enable homes to be built in some areas previously considered unsuitable because of noise;
- 2 noisy sites where residential development will never be suitable can be quickly identified, saving developers time and unnecessary costs; and
- 3 home building can be started much earlier on sites where noise is not an issue.

We are encouraged by this document and we would support further work with planning authorities to ensure the outcomes described.

Night flight restrictions

Following consultation in 2016, DfT published the night flight restrictions for the designated airports (Heathrow, Gatwick & Stansted) for the period 2017-2022. The environmental objective is 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 Government set out a number of indicators to assess how well the environmental objective will be measured which include:

- the area and number of people within the 48dB LAeq 6.5hr night contour;
- the WebTAG assessed sleep disturbance impacts;
- the average quota count of aircraft each season; and,
- the number of movements in the night quota period.

From October 2018, a new QC/0.125 category was introduced to reduce the number of aircraft exempt from the noise quota and all aircraft now count toward the airport’s movement limits. Noise quota limits at Heathrow were reduced from 5100 to 2735 (summer) and from 4080 to 2415 (winter).

For more detail see Annex 6 and the DfT *Night flight restrictions at Heathrow, Gatwick and Stansted*, Decision Document.

UK Aeronautical Information Publication (AIP)

The UK AIP is designed to be a manual containing thorough details of regulations, procedures and other information pertinent to flying aircraft in the UK. It covers aspects such as Continuous Descent Approaches (CDAs) and other noise abatement procedures. The full range of noise abatement procedures in the UK AIP can be accessed at the following link: http://www.nats-uk.ead-it.com/public/index.php?option=com_content&task=blgcategory&id=94&Itemid=143.html

A copy of the noise abatement procedures as of August 2018 can also be seen in Annex 8.

Local authorities and planning conditions

As well as government legislation, additional noise-related controls are introduced by local planning authorities as part of the planning system. This is often done by way of planning obligations contained in section 106 agreements made between the airport operator and the planning authority. At Heathrow airport there are a series of planning conditions that relate both to the planning permission for Terminal 4 and Terminal 5.

These conditions restrict various modes of aircraft operations at different times of the day relative to the location of the activity on the airfield.

A more detailed explanation of these and an airfield map are provided in Annexes 7 and 2 respectively.



5 HEATHROW'S FRAMEWORK FOR NOISE MANAGEMENT

In this section, we set out Heathrow's strategy for managing aviation noise, describe the measures currently in place and discuss the developments and outcomes from our previous Noise Action Plans.

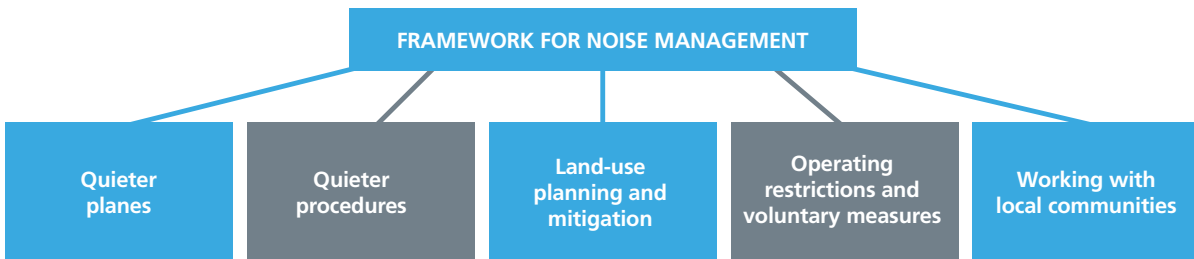
Our noise strategy

At Heathrow we are determined to remain at the forefront of international efforts to address the challenge of aircraft noise, while continuing to safeguard the connectivity and economic benefits that the airport provides.

Our Framework for Noise Management has five pillars as shown in Figure 5.1. The first four of these reflect the four principal elements of ICAO's Balanced Approach to Aircraft Noise Management.

Our first pillar, Quieter Planes, is based on the Reduction at Source element of the Balanced

Approach. Our second pillar, Quieter Procedures, reflects the element of Noise Abatement Operational Procedures. The third pillar is on Land-use Planning and Mitigation and includes sound insulation and land-use, similar to ICAO's second principal element. Our fourth pillar takes the Balanced Approach element on Operating Restrictions and expands it to include Voluntary Measures. Our fifth pillar, Working with Local Communities, goes beyond the Balanced Approach as we recognise the importance of community engagement and collaboration in identifying and understanding issues and working towards improvements.



APPROACH	GENERAL COMMITMENT
Quieter planes	As aircraft and technology improves and planes become quieter, we will continue to work to ensure that residents share in the benefits. We are committed to continuing to provide a strong financial incentive for airlines to use the quietest planes currently available, including in the early morning period, through the use of variable landing charges.
Quieter procedures	We are committed to take full advantage of opportunities to manage airspace differently, working with local communities to identify changes that could benefit them. This will include trialling new airspace management and operating procedures.
Land-use planning and mitigation	We are committed to continuing to help with noise insulation and mitigation through a range of schemes. We will also continue to press the Government to provide more detailed guidance on planning around airports, and to restrict noise sensitive development in high noise areas.
Operating restrictions and voluntary measures	We do not see restrictions as a first resort and are committed to developing voluntary measures through collaborative approaches. These can be quicker to implement and more effective. Where restrictions are in place we are focussed on ensuring that they are adhered to fully.
Working with local communities	Underpinning all of our work to address aircraft noise, we are committed to engaging openly and constructively with local communities to understand their concerns and to provide accessible information and an on-going dialogue.

Figure 5.1 Framework for noise management

5 HEATHROW'S FRAMEWORK FOR NOISE MANAGEMENT

Existing measures to manage aircraft noise

Based on our Noise Management Framework, Figure 5.2 provides a summary overview of the measures used at Heathrow to control noise impacts. These are explained in the following sections.

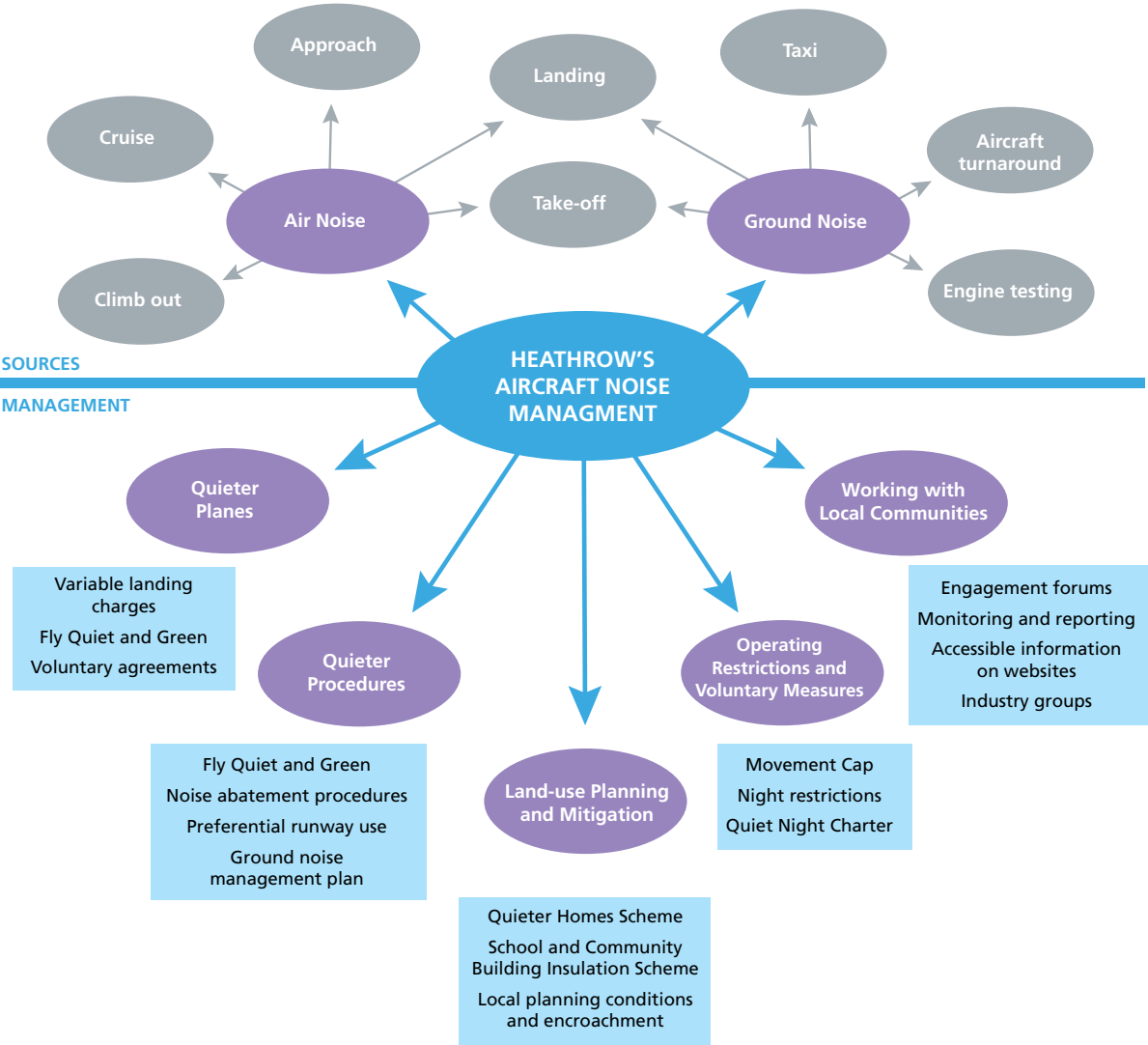


Figure 5.2 Heathrow Airport's noise management and control measures currently in place

Quieter planes

Tough noise management practices at Heathrow have played a key role in driving developments in quieter aircraft technology. Limits and restrictions at Heathrow, and in particular those that apply to flights at night, are seen by aircraft engine manufacturers as important tests for new aircraft to meet over and above those international requirements.

Since the late 1990s, Heathrow has provided a financial incentive for airlines to use the quietest aircraft through the use of variable landing charges. Each year we publish our Conditions of Use which include the differential charging structure for aircraft operating at Heathrow. These charges promote the use of best in class aircraft by charging more for the noisiest and less for the quietest aircraft in relation to the ICAO noise standards.

In 2017 we became the first airport in the world to introduce new charging categories based on the Chapter 14 noise standard. The qualification criteria are set out in Table 5.1 below and details of the charges can be found at www.heathrowairport.com/about-us/partners-and-suppliers/conditions-of-use

In 2016 Chapter 3 aircraft represented 0.55% of air traffic movements. In 2017 this dropped to 0.4% and August 2017 was the first month in the history of the airport with no Chapter 3 aircraft movements. For 2018, the noise charging rates were revised and the cost of landing a Chapter 3 aircraft became nearly 12 times more expensive than the quietest Chapter 14 aircraft. We continue to work towards our stated target of zero Chapter 3 aircraft movements by 2020.

Through the UK government and our membership of Airports Council International (ACI), we continue to work with and lobby ICAO to continually improve aircraft noise certification standards and to provide noise management and community engagement guidance.

Noise certification standards have been described in Section 4 (p. 17). Below, Table 5.1 shows the sub-categories of the noise chapters that are used for noise landing charges at Heathrow.

CRITERIA TO BE MET CONCURRENTLY	CHAPTER 3	CHAPTER 4 HIGH	CHAPTER 4 BASE	CHAPTER 14 HIGH	CHAPTER 14 BASE	CHAPTER 14 LOW
Chapter 14 certification or equivalent	NO	NO	NO	YES	YES	YES
Cumulative EPNdB reduction from ICAO Chapter 3 standard *	Less than 10	Less than 15	Less than 17	Less than 20	Less than 23	23 or more

*This represents the sum of the differences between the certified noise values for a particular aircraft registration at the three monitoring points (Flyover, Sideline and Approach) and the Chapter 3 limits at these points.

Table 5.1 Qualification criteria for noise categories

5 HEATHROW'S FRAMEWORK FOR NOISE MANAGEMENT

Quieter procedures

Arrival and departure procedures

A range of noise reduction measures are already in place at Heathrow. Some of these have been introduced by the Government and some are a result of voluntary initiatives by the airport, airlines

and NATS working together. The key procedures in place at Heathrow are summarised in Table 5.2 below with additional information given in Annex 6.

<i>SOURCE</i>	<i>MEASURE</i>	<i>AIM</i>
Departures	Noise Limits: There are noise limits applied at fixed noise monitors for departing aircraft and fines are enforced for breaches (see Annex 4 and 6).	To deter noisy movements by detecting and penalising aircraft which exceed the limits, and to encourage the use of quieter aircraft and best operating practice.
Departures	1000 ft rule: Aircraft are required to be at a height of not less than 1000 ft aal (above aerodrome level) at 6.5 km from the start of roll as measured along the departure track of that aircraft.	This encourages aircraft to gain height as quickly as possible and then reduce engine power and noise at the earliest opportunity. This aims to reduce the noise closer to the airport.
Departures	4% minimum climb gradient: Between 1000 and 4000 ft aal aircraft are required to achieve this.	This discourages low flying departing aircraft in areas near to the airport.
Departures	Noise Preferential Routes: Aircraft departing from Heathrow are required to follow specific flight paths called noise preferential routes (NPRs) up to an altitude of 4000 ft.	NPRs were designed to avoid overflight of built-up areas where possible.
Departures	Westerly preference: This means that during periods of light easterly winds, aircraft will often continue to land in a westerly direction making their final approach over London.	The westerly preference was introduced to reduce the number of aircraft taking off in an easterly direction over London – over the most heavily populated side of the airport.
Arrivals	Continuous Descent Approaches (CDA): The approach involves aircraft maintaining a steady angle of approach when landing at the airport, as opposed to stepped approaches which involve prolonged periods of level flight.	This aims to reduce noise for communities under arriving aircraft en route to the final approach as typically a CDA will require less engine thrust and keep the aircraft higher for longer.
Arrivals	Joining point rules: Aircraft landing at Heathrow follow a radio beam known as the Instrument Landing System (ILS) to align directly with the runway. At certain times of the day and night there is a minimum altitude at which aircraft can join the ILS. At these times they cannot be below this altitude.	This ensures that all aircraft maintain a consistent approach angle and flight path from a minimum distance from the runway. This avoids aircraft turning on to the final approach at lower altitudes over communities close to the airport.
Arrivals	Limiting use of reverse thrust: At night-time.	To minimise disturbance in areas close to the airport.
Arrivals	Runway alternation: During westerly operations (when aircraft arrive and depart towards the west) and wherever practicable, the arrival runway is alternated according to a published schedule. The departure runway is also alternated.	To provide local communities with predictable periods of time without flights overhead by using the runways in a predictable pattern.
Arrivals	Slightly Steeper Approaches: Aircraft on final approach descend at an angle of 3.2 degrees, slightly steeper than the standard 3 degrees.	This procedure being trialled keeps some aircraft slightly higher and can provide a small reduction in noise.
Ground noise	Auxiliary Power Units (APUs), Ground Power Units (GPUs), Pre-Conditioned Air (PCA) usage and engine testing, especially at sensitive times when air noise is less dominant, are controlled through Operational Safety Instructions (OSIs). Regular audits are undertaken to monitor compliance.	This procedure seeks to optimise use of appropriate ground power services at the most appropriate time and in the most appropriate circumstances to reduce or limit ground noise, emissions and fuel usage. It also includes robust restrictions on night ground engine run tests to reduce ground noise at the most sensitive time.

Table 5.2 Range of current operating procedures

Ground Noise Management Plan

The major noise-making ground-based activities at Heathrow include aircraft taxiing, engine ground runs (EGR) and the operation of aircraft auxiliary power units (APU). Noise from these sources are not included in the strategic noise maps and are not required to be included in an airport's Noise Action Plan, but we know from active engagement with local residents that it is of concern and that there is more we can do to structure our approach to managing and monitoring ground noise impacts.

We have tightened our operating rules, improved our record keeping and pre-approval processes and implemented a ground noise monitoring trial. All of this will help us to better understand and control ground noise.

Land-use planning and noise mitigation

Noise Insulation Schemes

Heathrow Airport Limited has been offering a range of noise insulation and mitigation schemes that have met or exceeded Government guidance since the mid-1990s. Our current schemes are described below in Table 5.3 and Annex 9 shows the boundary of each scheme.

Following feedback in the development of this draft Noise Action Plan and in light of the 2017 Government decisions, we will include a new action (Action 3.1) in this plan to undertake a review of our noise insulation schemes by the end of 2021.

MITIGATION SCHEME	DESCRIPTION
Community buildings noise insulation scheme	This scheme applies to noise-sensitive, community buildings that fall within the 2002 63dBA L_{eq} 16hr noise contour, including hospitals, schools and colleges, nurseries attached to schools and hospices, nursing homes, registered nurseries, libraries and community halls. All reasonable measures are used to encourage the community buildings owners to register for the scheme. The scheme then provides acoustic insulation to the registered buildings and this can extend to window replacement and mechanical ventilation.
Home relocation assistance scheme	For properties that fall within the 1994 69dBA L_{eq} 18hr noise contour at Heathrow, and residents who have lived within the property since February 2005, this scheme provides eligible home-owners with financial assistance with the costs of moving away from areas of high levels of airport noise. The scheme is currently capped at £12,500 per home.
Night noise insulation scheme	Any resident of a property within the scheme boundary is eligible. This is based on the noise 'footprint' of the noisiest aircraft regularly operating between 23:30–06:00 in 2004/05 90dBA SEL contours. Since the scheme is intended to mitigate the impact of night flights, rooms eligible for insulation are bedrooms or bed-sitting rooms only (which are used as bedrooms on most days of the year).
Residential day noise insulation scheme	This scheme provides acoustic insulation to residential buildings in the local community. This includes free secondary glazing or half price double glazing to external windows and doors only, plus loft insulation. It is restricted to the 1994 69dBA L_{eq} 18hr noise contour, enhanced to take account of early morning arrival noise.
Quieter Homes Scheme	This scheme uses every reasonable measure to get home owners in the 2011 69dBA L_{eq} 16hr contour to register for the scheme. Acoustic insulation is then provided to these registered, residential buildings. This includes free secondary glazing or double glazing, to external windows and doors only, plus mechanical or passive ventilation, ceiling overboarding and loft insulation.

Table 5.3 Range of noise insulation and mitigation schemes that Heathrow currently offers

5 HEATHROW'S FRAMEWORK FOR NOISE MANAGEMENT

Local planning conditions

We support the principles of the Aviation Policy Framework (APF) which align with the National Policy Planning Framework (NPPF) and expect local planning policies to ensure that new development is appropriate for its location and the effects of pollution – including noise – on health, the natural environment or general amenity are taken into account.

This does not rule out all noise-sensitive development in locations that experience aircraft noise. The NPPF is quite clear that the planning system should prevent new development being put at unacceptable risk or being adversely affected by unacceptable levels of noise pollution.

Our 2016 Airport Noise contour report (ERCD Report 1701, page 158) shows how many people would be in the 55dB L_{den} 2016 contour area using both the 2006 and 2016 population databases (based on data provided by ERCD, CAA using the CACI database). Inside that same contour area (198 km²), there were 599,800 people based on the 2006 database and 689,400 people based on the 2016 database.

This means that compared to 756,100 people inside 55dB L_{den} in 2006, if the population and households remained constant, there would have been a reduction in both population and households of 21%. In fact, over that time, whilst the area of the 55dB L_{den} footprint has reduced by 19%, the population and households exposed have only decreased by 9% and 15%, respectively.

Of course, we recognise that there is a high demand for housing and people want to move into London. Airport noise may or may not be a consideration for many making that decision – especially at the lower noise levels. However, the same trend of new housing occurs in areas with higher noise levels. We believe according to the NPPF and APF, that Local Authorities have a responsibility to ensure appropriate protection where development is permitted in noise impacted areas.

We will continue to work with local authorities, government and local community groups on local plans. In this Noise Action Plan we include actions on developing local planning guidance (Action 3.6) and a joint position paper on Encroachment (Action 3.8).

As part of the planning process for Terminal 4 and Terminal 5 a number of special conditions were attached to the planning permission which relate to airport noise management. These are set out in Annex 7.

Operating restrictions and voluntary measures

The following operating restrictions are in place at Heathrow.

- **Air Traffic Movement Cap** – There is an annual ATM cap of 480,000 a year which was set out in the consent conditions for Terminal 5.
- **Night flight restrictions** – As mentioned in Section 4, the DfT consulted on and published the new restrictions at the end of 2017. An overview of the current regime is provided in Annex 6.

With our airlines we have committed not to schedule aircraft to arrive before 04:30. It is a voluntary measure and has not been breached, except in an emergency. We measure performance on this in our Fly Quiet and Green program.

Another voluntary measure is the agreement not to schedule cargo flights to operate between 23:30 and 06:00 local time.

Heathrow participates in government reviews of restrictions and guidance. It is anticipated that the Government will soon be reviewing the guidelines which govern what circumstances might exempt a night flight from the night flight restrictions described above.

In partnership with our airline partners, we are developing a Quiet Night Charter (QNC) aimed to provide and support predictable operations, fewer off-schedule air traffic movements, greater transparency and quieter operations. (This is due to be put in place by the end of October 2018.) Action 4.2 of this Noise Action Plan has been written to ensure support for this initiative.

Working with our local communities and industry stakeholders

The Government's Aviation Policy Framework (APF) promotes working in partnership and actively participating in a number of engagement forums with a range of stakeholders on noise. The APF "is underpinned by two core principles:

- **Collaboration:** *By working together with industry, regulators, experts, local communities and others at all levels, we believe we 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."*

These are two principles that we have long supported in our approach to noise management. Accordingly, working in partnership with communities and industry is a key pillar of our Noise Management Framework. Table 5.4 provides a list of Heathrow's stakeholder engagement forums and industry groups.

One of our key community engagement forums focused on noise is the Heathrow Community Noise Forum (HCNF). It was established in 2015 and is made up of representatives from local authorities and community representatives from around the airport, along with industry representatives from NATS, BA, Virgin, DfT, CAA and Heathrow.

The Forum was set up to establish a common level of understanding of Heathrow's existing operations amongst community representatives and stakeholders. It also seeks members' inputs into the planning and preparation of Heathrow's future airspace design as part of the Government's plans to modernise the UK's airspace.



5 HEATHROW'S FRAMEWORK FOR NOISE MANAGEMENT

<i>FORUM</i>	<i>DESCRIPTION</i>
Engagement forums	
Heathrow Airport Consultative Committee (HACC)	The Heathrow Airport Consultative Committee has now become the Heathrow Community Engagement Board (see below).
Heathrow Community Engagement Board (HCEB)	The HCEB acts as a focal point for engagement between Heathrow airport, local authorities, community groups, passengers and other airport users. In 2018, it was agreed that the Heathrow Airport Consultative Committee (HACC), an existing forum for local authorities, airport users and interest groups, would take on the additional responsibilities of the engagement board. The HACC was relaunched formally as the HCEB at the start of 2018.
Aircraft Noise Monitoring Advisory Committee (ANMAC)	ANMAC was set up by the Government in the early 1990's to advise them on the operation of the noise monitoring equipment which Heathrow had been required to install by the DfT under the Civil Aviation Act 1982. Since then the committee has been used as an advisory body on various noise issues. Membership includes representatives from NATS, the Environmental Research and Consultancy Division (ERCD) of the CAA, the Scheduling Committees and their technical advisors, representatives from Heathrow, Stansted, and Gatwick as well as a representative and technical adviser from the Consultative Committees of the three airports. The committee is chaired by the Head of the Aviation Environment Division at the DfT.
Heathrow Community Noise Forum (HCNF)	The HCNF was set up to establish a common level of understanding of Heathrow's existing operations amongst community representatives and stakeholders. It also seeks members' inputs in the planning and communication of the modernisation of Heathrow's airspace and to agree relevant studies and analysis to be carried out to establish changes to flight paths.
Heathrow Strategic Noise Advisory Group (HSNAG)	The aim is for this group to be a focal point for stakeholder involvement in the management of aircraft noise and to provide a common level of understanding between different stakeholder groups of opportunities to reduce aircraft noise and of local community priorities. The HSNAG aims to foster collaboration, identify and agree improvements to reduce aircraft noise and seek to develop new solutions.
Flight Operations Performance and Safety Committee (FLOPSC)	FLOPSC is a committee comprising pilots, NATS and Heathrow Airport Limited's Airside Operations team. It reviews noise, track and CDA performance, shares best practice and also advises on noise abatement procedures.
Local Focus Forum (LFF)	The LFF is a quarterly meeting hosted by Heathrow and made up of residents' associations and local councillors from those villages bordering Heathrow. At the forum, Heathrow share information about pending developments and changes to operations that might affect the local area.
Industry and community groups	
Aircraft Noise Engagement Forum (ANEG)	ANEG acts as a formal channel of communication between the Department for Transport and airspace and airport noise stakeholders. It covers all aspects of national airspace and airport noise policy development and acts as a sounding board to identify, discuss and, where possible, resolve airspace and airport noise issues.
Sustainable Aviation	Sustainable Aviation brings together the main players from UK airlines, airports, manufacturers and air traffic service providers around a long term strategy which sets out the collective approach of UK aviation to ensure a sustainable future for the industry. Heathrow's involvement with Sustainable Aviation enables us to engage with the relevant experts and explore opportunities to improve environmental performance. For example Sustainable Aviation was involved in the development of a Departures Code of Practice and has published a Noise Road Map which has been considered in the development of this Noise Action Plan.
Airports Council International (ACI)	ACI represents airports in discussions with international organisations. The most important relationship is with the International Civil Aviation Organisation (ICAO), where international standards for air transport are debated and developed. ACI represents airports and develops standards and recommended practices for safety, security and environmental initiatives. Heathrow's membership of ACI gives it the opportunity to encourage the exchange of knowledge between European airports and share best practice.
Strategic Aviation Special Interest Group (SASIG), Aviation Environmental Federations (AEF), Heathrow Association for the Control of Airport Noise (HACAN)	We regularly meet with a range of community interest groups within the forums detailed above and individually.

Table 5.4 Heathrow's stakeholder engagement forums and industry groups

The HCNF meets every two months. Two working groups also feed into the main Forum – one on ‘Monitoring, Research and Policy’ and the other focused on ‘Operating Procedures’.

More information on the HCNF can be found at www.heathrow.com/hcnf

Community groups and local authorities are also represented on groups such as the Heathrow Strategic Noise Advisory Group (HSNAG) and we engage directly with some community groups such as the Teddington Action Group, HACAN, the Richmond Heathrow Campaign and the Richings Park Residents Association.

Our airline partners are involved with many of the groups listed in Table 5.4 and we have an open invitation for them to engage with our Airspace Noise and Performance team on operational and noise issues. Programmes such as Fly Quiet and Green have been very effective at encouraging airlines to work with us on improving their noise, fleet and flight track performance.

NATS, the UK air navigation service provider, is continually engaged through many of the groups listed in Table 5.4, including the HCNF, ANMAC and HSNAG.

Complaints service

Heathrow offers a noise complaints service which aims to provide full and comprehensive information to residents on how they are affected by Heathrow’s operations.

Aircraft noise complaints can be made to the Heathrow Community Relations team via our online form (heathrow.com/noise), email (noise@heathrow.com) or by calling 0800 344844. We will record all complaints received and aim to respond to all complaints within five working days (providing that the necessary contact details are provided).

We publish quarterly noise complaint reports on the Heathrow noise website www.heathrow.com/noise which includes data on the number of people and complaints received, along with the geographic locations of where the complaints have come from.

Communications tools

Heathrow provides a dedicated Noise website www.heathrow.com/noise which hosts or links to a number of online tools which are accessible to the public and other stakeholder groups. Through the Noise website, residents and other stakeholders can access a wide range of information, which includes:

- Information on Heathrow’s operations such as arrivals, departures, wind direction and night flights.
- A selection of monthly and daily statistics such as the number of arrivals, departures, early morning and night flights, airline flight track accuracy, runway usage and complaints. A breakdown of daily statistics can be found on www.heathrowoperationaldata.com
- WebTrak, an on-line facility that allows people to see and track flights showing the aircraft type, flight number, speed and altitude, as well as the noise levels detected on our network of over 52 noise monitors. (For data processing reasons and accuracy, the data is delayed by approximately 20 minutes).
- xPlane, a purpose-built tool that allows residents to carry out their own analysis of Heathrow flights and obtain data such as height, position and types of aircraft over a historic period.
- WebTrak My Neighbourhood, which provides a broader view of how often particular flight paths are generally used on a monthly, quarterly or yearly basis.
- Reports, HCNF meeting notes and presentations, annual and quarterly performance reports.

In 2013 Heathrow launched a dedicated Twitter service to provide real-time runway updates so that local communities affected by noise know what runways are being used for landings and departures each day, and the reasons for a change throughout the day. The service also keeps residents informed about any unexpected circumstances that impact runway operations (such as bad weather or an emergency) which may result in changes to the published runway alternation schedule – see [@Heathrownoise](https://twitter.com/Heathrownoise). The Twitter updates can also be found on the Heathrow Noise website homepage.



6 RESULTS OF THE 2016 NOISE MAPPING

2016 Noise Mapping

The Environmental Noise Directive (END) requires that Member States produce strategic noise maps for the main sources of environmental noise, i.e. major roads, major railways, major airports and for agglomerations with a population of 250,000 persons and a certain population density. The END requires the noise contours for a calendar year with the metrics L_{den} , L_{day} , $L_{evening}$, and L_{night} , and in the UK we also report the summer contours – L_{eq} 16hr day, L_{eq} 8hr night and L_{eq} 6.5hr night.

While DEFRA oversees the Noise Action Plan development process, the UK government has designated that the CAA is the competent authority to conduct the noise mapping.

The 2016 Strategic Noise Maps for Heathrow were included in the DEFRA Airport Noise Action Plan Data Pack 2017 London Heathrow Airport (EGLL) July 2017 and these maps are reproduced in Annex 11. Following the noise mapping at Heathrow in 2006 and 2011, the 2016 noise contours are now the third set produced to satisfy the END requirements. At Heathrow, to better track developments we have conducted this noise mapping every year since 2009.

Annex 12 contains the results of the analysis of the 2016 Strategic Noise Maps. This includes data on the area of various contours and the number of dwellings and the estimated population at each noise level for the metrics L_{den} , L_{day} , $L_{evening}$, L_{night} and L_{eq} 16hr for the years 2006, 2011 and 2016.

Some notable outcomes from the 2016 noise mapping as discussed in Annex 12 are outlined below.

- For all noise metrics, namely L_{den} , L_{day} , $L_{evening}$, L_{night} and L_{eq} 16hr the number of dwellings and people in each band (with very few exceptions) decreased between both 2006 and 2011 and between 2011 and 2016.
- The L_{den} results (Table 12.1 in Annex 12) show that the area of the contours has reduced for all contour levels. The area of the 55 dB L_{den} contour was 198 km² (19% lower than in 2006) and was estimated to contain a population of 683,700, compared with 766,100 in 2011 and 725,500 in 2006.

- Note that the 2016 population within 55dB L_{den} was only 6% lower than in 2006. This is a result of the increase in population in those noise impacted areas. Had the population remained constant over the period, the decrease would have been approximately 17%.

More detailed information on noise mapping and trend analysis is available in the Heathrow Airport 2016 Noise Action Plan Contours and 2016 Summer Contours available from our website. This contains the END contours, the 2016 summer L_{eq} contours, as well as a broad range of supplementary metrics, some for the first time, including overflight track density diagrams and single mode contours. Much of this content was developed in response to community requests resulting in the most comprehensive noise contour report ever produced by Heathrow.

It should be noted that DEFRA uses the Office of National Statistics (ONS) population database for its END strategic noise mapping and thus for this Noise Action Plan. In contrast, the CAA uses the CACI population database, and this is the basis of the data presented in our 2016 Noise Contour report. There can be small differences of 0.5-1% in population figures due to the different databases.

Outcomes of two Heathrow Noise Action Plans

Noise Action Plan 2010-2015 and Noise Action Plan 2013-2018

Nearing the end of the period covered by Heathrow's second Noise Action Plan, we can provide a summary of progress made against the actions in the current Noise Action Plan 2013-2018, and an overview of progress since the first END 2006 Strategic Noise Map was developed as part of the first Noise Action Plan 2010-2015. These outcomes serve as a testament to implementation of Heathrow's strategic approach and our Framework on Noise Management.

In the second Noise Action Plan 2013-2018, Annex 16 contained the projected contours for 2018 that were forecast in 2012. The L_{den} and L_{night} 8hr contours for 2018 produced calculated contour areas and numbers of households and the population within them. These 2018 projected contours are compared with the 2016 Strategic Noise Maps in Table 6.1 below.

6 RESULTS OF THE 2016 NOISE MAPPING

NOISE METRIC	STATISTIC	PREDICTED FOR 2018	ACHIEVED BY 2016 OUTCOMES	COMMENTS
55 dB L_{den} contour	Area	203.1 km ²	198.0 km ²	Predictions achieved at least two years early.
	Population	707,600	689,400	
	Households	289,000	286,100	
50 dBA L_{night} contour	Area	66.6 km ²	74.0 km ²	Reductions achieved but not yet at predicted levels, two years out.
	Population	187,600	221,200	
	Households	70,900	86,300	

Table 6.1 Comparison of 2018 predictions with 2016 outcomes

These results highlight that on-going improvements in noise management and the fleet are resulting in reducing noise levels and the physical extent of the L_{den} contours. Despite greater reductions in the noise level during the 6.5 hour Night Quota Period (NQP) period (23:30-06:00), the 8 hour night time noise contour (23:00-07:00) has not reduced as quickly as the L_{den} and this serves as a reminder that extra efforts are required to reduce night time noise. Accordingly, we have included specific

actions in this Noise Action Plan on night time noise such as the implementation of the Quiet Night Charter (QNC) developed in collaboration with our airline partners.

Annex 13 contains a summary of the actions in the Noise Action Plan 2013-2018 and a brief description of the progress and outcomes of each of the 44 actions. Table 6.2 below shows the key highlights and achievements of Heathrow's work on aircraft noise management over the last decade.

AREA	OUTCOMES
Noise Mapping Outcomes	<p>The area of the L_{den} 55 dBA noise contour decreased by 19% from 245 km² in 2006 to 198 km² in 2016. This is our smallest noise contour ever recorded. The result was a 9% reduction in the population inside that contour.</p> <p>For most locations this meant a reduction in noise levels between 1 and 3 decibels.</p> <p>The area of the L_{night} 50 dBA noise contour decreased by 12% from 84.4 km² in 2006 to 74.0 km² in 2016.</p>
Quieter Planes	<p>Chapter 3 aircraft movements are down to 0.4% of total movements in 2017, compared to 11% in 2010. August 2017 was the first month on record with no Chapter 3 aircraft movements.</p> <p>Chapter 14 aircraft now account for over 60% of total movements.</p>
Quieter Procedures	<p>Fly Quiet and Green was launched in 2013– it is the first European public noise performance league table. The programme has improved airline engagement on both fleet and flight performance.</p> <p>CDA has improved from 83.75% in 2010 to 88.46% in 2017.</p> <p>Track keeping on departure has improved from 94.68% in 2010 to 96.23% in 2017.</p> <p>Studies and trials have been conducted on departure profiles, PBN implementation, Slightly Steeper Approaches and the detection of landing gear deployment.</p> <p>Late running departures (after 23:30) have decreased from 295 in 2015 and 330 in 2016 to 235 in 2017.</p>
Land-use Planning and Mitigation	<p>To date under the Quieter Homes Scheme, we have completed insulation on 542 out of 1,158 eligible properties.</p> <p>The glazing works have been completed in all 43 eligible community buildings including schools. Ventilation systems have been installed at seven schools. Our funds at seven schools have paid for energy reducing infrastructure changes to meet government targets to reduce energy cost by 30%.</p> <p>The Adobe project provided semi-enclosed education and learning areas at 16 schools. Booklets were produced with lessons plans and shared with all schools to encourage registrations for the project.</p>

Table 6.2 Highlights of noise outcomes after second Noise Action Plan (continues overleaf)

AREA	OUTCOMES
Operating Restrictions and Voluntary Measures	<p>We have adhered to our total movement limit of 480,000 per annum while increasing total passenger movement from 67.5 million in 2006 to 78 million in 2017. At the same time the areas of the annual L_{den} noise contours have shrunk by 19%.</p> <p>We have successfully implemented to our voluntary ban on arrivals landing prior to 04:30, with only two breaches occurring since 2014.</p> <p>Similarly, we implemented the voluntary ban on scheduling cargo flights in the Night Quota Period (NQP) 23:30-06:00.</p> <p>The area of the 48 dB $L_{eq\ night}$ 6.5hr (the NQP period) decreased by 40% from 56.4 km² in 2006 to 33.9 km² in 2016.</p> <p>The Quota Counts (QC) for summer and winter have consistently decreased. QC Summer was 5228 (2007), 4505 (2010) and 2304 (2016). QC Winter was 4266 (2006), 3735 (2010) and 2259 (2016). These trends are reflected by the new DfT QC limits of 2735 in summer and 2415 in winter.</p>
Working with local communities	<p>The Heathrow Strategic Noise Advisory Group (HSNAG) and the Heathrow Community Noise Forum (HCNF) have been established and meet every two months.</p> <p>The Heathrow Community Fund has provided £316,000 (2013-2017) from noise fines and supported community projects ranging from tree planning to church roof restoration.</p> <p>Noise monitoring has expanded from 12 to over 50 monitors and community noise is reported in an agreed format with around 20 noise and flight track metrics.</p> <p>As well as WebTrak and WebTrak My Neighbourhood, xPlane is now available to assist community members with tracking movements and understanding changes by allowing them to carry out their own analysis of Heathrow flights. WebTrak has been upgraded to show the Noise Preferential Routes (NPR) and a rainfall layer.</p> <p>The Respite Working Group has delivered two reports on the perception and value of respite and is drafting a report which considers non acoustic factors.</p>

Table 6.2 Highlights of noise outcomes after second Noise Action Plan (continued)

Identification of noise problems and situations

For many years Heathrow has been at the forefront of international efforts to address aircraft noise. As a result of our efforts, Heathrow's noise footprint is at its smallest recorded. This is a great achievement, but we know there is more we can do to continue to reduce the impacts of aircraft noise.

As reported in Annex 12, the area of the 55dBA L_{den} contour is at 198 km² and this contains 288,050 dwellings in which 683,700 people live.

Based on this analysis, the following items are highlighted as the most important to work on during the next Noise Action Plan period 2019-2023.

- Continuing to focus on encouraging an ever-quieter aircraft fleet using Heathrow;
- Driving greater consistency in implementing existing noise abatement procedures and working on new opportunities where evidence supports their introduction;

- Delivering the Quiet Night Charter to support predictable operations, fewer off-schedule movements, greater transparency and quieter operations;
- Continue working with local authorities to avoid encroachment and reduce the number of dwellings and people living in the highest noise areas;
- Reviewing and delivering our sound insulation programme while working to ensure that new homes are built with appropriate sound insulation ratings; and
- Improving our management of noise from ground-based sources including monitoring and mitigating.



7 DEVELOPING THE NOISE ACTION PLAN

Noise Action Plan – updated guidance

As mentioned earlier, Noise Action Plan requirements are set out in the Environmental Noise (England) Regulations 2006 (“the Regulations”) transposed from the EU Environmental Noise Directive (END) 2002/49/EC. In July 2017, DEFRA published updated guidance for airport operators to review and update their Noise Action Plans. (Extracts are provided in Annex 14.)

DEFRA also provided an Airport Noise Action Planning Data Pack 2017 which contained the 2016 strategic noise mapping of Heathrow Airport. (These are reproduced in Annex 11.) The data pack included the estimated population and dwelling statistics for various noise level indicators and associated noise level contour maps.

It should be noted that DEFRA use the Office of National Statistics (ONS) population database for its END strategic noise mapping. In contrast, the CAA uses the CACI database to calculate the population data presented in our 2016 Noise Contour report.

While the guidance recognises that this Noise Action Plan is basically a revision of the previous plan, it does require that the public are consulted and given effective opportunities to participate in the preparation and review of the Noise Action Plan. Public input must be taken into account and the public should be kept informed of decisions taken.

We took the steps outlined below to develop this draft Noise Action Plan 2019-2023 for public consultation. See Annex 15 for a summary of the development and consultation events.

1 Collaborative development of draft Noise Action Plan

In compiling this third Noise Action Plan we have used a wide range of information documents including:

- Our second Noise Action Plan (2013-2018), performance data and a review of progress and relevance against the existing actions;
- The Aviation Policy Framework and recent Government policy documents such as the draft Airport National Policy Statement, the draft Airspace Policy and draft National Planning Policy Framework;
- The 2016 Strategic Noise Maps and annual contour trends (see Annex 11);
- The audit findings during the life of our second Noise Action Plan (2013-2018) (see Annex 10); and,

- Resident feedback from polling and complaints (see Annex 13).

Starting in June 2017, we also held six workshops with the working groups of the HCNF to collect views and ideas from community and industry stakeholders on draft and new actions for the Noise Action Plan. (See Annex 15.) In January 2018, a one-day workshop for airlines was held including a joint group discussion and sessions with individual airlines to gather their views on continued, modified and new actions. Other groups consulted included the main HCNF, HSNAG and local authority environmental health officers.

The key outcomes of these collaborative efforts were the draft actions which are included in Section 8.

2 Public consultation, feedback and redrafting

We held a public consultation on the draft of this Noise Action Plan from 16 May to 26 June 2018. Public outreach and events included a mail drop in the highest noise areas (>65dBA L_{den}), advertisements in local newspapers in a wider area (>55dBA L_{den}), a website, letters to councils and MPs and three drop-in events at the Heathrow Academy. More details are provided in Annex 15.

A total of 55 written responses were submitted and these raised approximately 260 issues. These have been sorted and grouped and responses are contained in Annex 15.

3 Submission and publication

DEFRA requires that this draft Noise Action Plan be submitted by 31 August 2018. The Secretary of State will then decide whether to adopt it (with any proposed modifications) for formal publication in early 2019.

4 Annual reviews

We are committed to annually reviewing our Noise Action Plan in light of progress, audit findings and developments within the industry generally. Consequently, the specific actions detailed in Section 8 may be amended or replaced in response to these reviews. We will confirm any amendments with the Heathrow Strategic Noise Advisory Group (HSNAG) and the Heathrow Community Noise Forum (HCNF). (See Actions 5.16 and 5.17.)

We will also review, and if necessary revise, our Noise Action Plan in the event of any major development affecting the existing noise situation at the airport, in accordance with the legal requirements relating to Noise Action Plans.



8 OUR APPROACH TO MANAGING NOISE (THE NOISE ACTION PLAN)

Quieter Planes

To work with our airline partners to ensure that Heathrow operates with a 'best in class' fleet mix and report annually

REF	SHORT TITLE	ACTIONS	DATE	PERFORMANCE INDICATOR	TARGET	IMPACT	COMMUNITIES AFFECTED
1.1	Ch3 and Ch4 phase out	We will continue to engage with our airline partners to achieve the voluntary phase out of Chapter 3 aircraft by 2020 and Chapter 4 (equivalent) by 2045.	2020	% Ch3 % Ch4 (High and Base) % Ch14 (High, Base and Low)	Ch3 0% by 2020, Ch4 40% 2020, 0% by 2045	Arrivals Departures Ground Noise	Communities within and beyond 55dB L _{den}
1.2	Landing charges structure	In line with the annual Airport Charges consultation process, we will review the structure of our landing charges and consult with airlines.	2019	Evidence of the review process	Complete review by 2019	Arrivals Departures Ground Noise	Communities within and beyond 55dB L _{den}
1.3	Landing charges differential	We will annually review the differential between the noisiest and quietest categories in our landing structure to encourage the use of the quietest aircraft practicable at Heathrow. The charges will be published annually in our Conditions of Use.	Annual	Noise charges for Ch3 and Ch14 Low aircraft	Complete annual review	Arrivals Departures Ground Noise	Communities within and beyond 55dB L _{den}
1.4	CAA Charges recommendations	We will review the recommendations on charges made by CAA (CAP 1576) including incentives for shifting to best in class, separating landing and take-off charges, and increasing surcharges for unscheduled night-time operations. We will work with our airline partners to identify how to respond and implement them by 2019 as part of our responsibilities under 1.2 and 1.3 above.	2019	Evidence of the review process	Complete review and develop responses	Arrivals Departures Night Flights	Communities within and beyond 55dB L _{den}
1.5	New aircraft type studies	For all new aircraft types with scheduled operation at Heathrow and a representative data set, we will undertake comparative noise studies relative to older equivalent aircraft types with the CAA in order to show the relative performance of new aircraft types.	NA	Report for each new aircraft type	One study commissioned per each new aircraft type	Arrivals Departures Ground Noise	Communities within and beyond 55dB L _{den}
1.6	Database audit	To ensure accuracy of our noise certification data, we will commission CAA to undertake an audit of our database by summer 2019. We will continue to regularly audit our database until EASA establish a central European database.	2019	Number of erroneous entries	No erroneous entries in our noise certification database identified.	Arrivals Departures Ground Noise	Communities within and beyond 55dB L _{den}
1.7	A320-family retrofit & Ch3 league table	We will publish a league table of airlines operating A320-family aircraft and the percentage of those retrofitted, and another one showing airlines that continue to operate Chapter 3 aircraft by summer 2019.	2019	% A320-family movements retrofitted and Ch3 movements by airline	Publish league tables	Arrivals Departures Ground Noise	Communities within and beyond 55dB L _{den}

8 OUR APPROACH TO MANAGING NOISE (THE NOISE ACTION PLAN)

Quieter Procedures

We will work with all our stakeholders to explore and employ best practice, lower noise operating procedures to reduce the impact of aircraft on residents

REF	SHORT TITLE	ACTIONS	DATE	PERFORMANCE INDICATOR	TARGET	IMPACT	COMMUNITIES AFFECTED
2.1	Minimum performance standards	Building on the principles of Fly Quiet and Green (FQG) and in support of the noise related requirements of the Arrivals Code of Practice (ACOP) and Departures Code of Practice (DCOP) and to improve compliance with the AIP, we will establish minimum performance standards and a process for monitoring performance against these standards by 2019. Work with airlines on escalating issues and collaborating to ensure that these standards are met.	2019 and then on-going	Report on compliance with minimum performance standards	For all new scheduled airlines to meet the minimum performance standards within 3 years of starting operations	Arrivals Departures	Communities within and beyond 55dB L _{den}
2.2	FQG improvement	We will work with airlines to improve the overall FQG scores, working towards increasing the green scores.	2020	Number of green scores	More green score dots than 2018 baseline	Arrivals Departures Ground Noise	Communities within and beyond 55dB L _{den}
2.3	FQG review	Undertake an evaluation every three years of the effectiveness of FQG, and make recommendations for its improvement, new metrics, and for setting future targets.	2021		Complete review by 2021	Arrivals Departures Ground Noise	Communities within and beyond 55dB L _{den}
2.4	Departure noise management	Subject to the findings of 2018 Detling departure climb study and the ANMAC Departure noise study, we will assess the benefits of changes to noise departure management for current airspace and set out proposed next steps by 2019, and subsequently engage with stakeholders.	2019	Evidence of review	Report on minimum departure noise management and next steps	Departures	Communities within and beyond 55dB L _{den}
2.5	Benchmark operating procedures	We will benchmark operating procedures used at Heathrow against other comparative airports by 2020, subject to the relevant data for other airports being publicly available.	2020	Evidence of study	Benchmarking report	Arrivals Departures	Communities within and beyond 55dB L _{den}
2.6	4% climb compliance	We will take steps to work towards a 100% compliance (subject to safety) with the 4% minimum climb gradient by 2019.	2019	% compliance with 4% climb	Minimum 99.7% a calendar year	Departures	Communities within and beyond 55dB L _{den}
2.7	Airline SOP surveys	We will survey airlines' Standard Operating Procedures (SOPs) every five years and maintain findings	2020	Evidence of survey	SOP records with data from at least 30 airlines	Arrivals Departures	Communities within and beyond 55dB L _{den}
2.8	CDA	We will continue to review our Continuous Descent Approach (CDA) compliance data and work with airlines and ATC with a view to continually improving compliance.	2020	% of arrivals CDA	89% by 2020, 2023 target TBC	Arrivals	Communities within and beyond 55dB L _{den}
2.9	TEAM	We will ensure compliance with the rules covering the use of Tactically Enhanced Arrivals Mode (TEAM) and publish statistics on its use.	2020	Number of TEAM arrivals each day	TBC after 2019 baseline	Arrivals	Communities within and beyond 55dB L _{den}
2.10	SSA	We will continue to facilitate elective Slightly Steeper Approach (SSA) and explore opportunities for mandatory application.	2020	Number of SSA (reported annually)	-	Arrivals	Communities within and beyond 55dB L _{den}
2.11	Arrival noise study	We will continue to investigate ways to measure and automate reporting in relation to landing gear deployment.	2023	Evidence of investigation	Deployment of a landing gear monitor system by end 2023 (if feasible)	Arrivals	Communities within and beyond 55dB L _{den}
2.12	Alternation study	We will publish a study on the perceived value of the respite provided by runway alternation by 2019.	2019	Study completed	Report published	Arrivals Departures	Communities within and beyond 55dB L _{den}

REF	SHORT TITLE	ACTIONS	DATE	PERFORMANCE INDICATOR	TARGET	IMPACT	COMMUNITIES AFFECTED
2.13	PBN Implementation	With the HCNF we will develop a scope for a study on the benchmarking of Performance Based Navigation (PBN) implementation including international experiences and publish a report by 2019.	2019	Scope developed	Report published	Arrivals Departures	Communities within and beyond 55dB L _{den}
2.14	Airspace Design Principles	In line with CAA guidance, we will establish and report our Airspace Design Principles which will guide and shape how we approach airspace change at Heathrow.	2019	Progress made on establishing principles	Report published	Arrivals Departures	Communities within and beyond 55dB L _{den}
2.15	SEL/L _{max} footprints	To understand the variability in noise levels that can be caused by various factors, we will commit to showing the effect of different procedures, weather, and aircraft destinations on SEL and L _{max} noise footprints for the most common aircraft types.	2020	Protocol defined for assessment	Report published	Arrivals Departures	Communities within and beyond 55dB L _{den}
2.16	Identifying changes	We will investigate the feasibility of establishing procedures to monitor operational statistics and setting change thresholds that trigger early investigations to explain why the change has occurred.	2021	Progress on investigative project	Report on investigative project	Arrivals Departures	Communities within and beyond 55dB L _{den}
2.17	GNMP	We will develop, publish and implement a Ground Noise Management Plan (GNMP) to monitor and manage ground noise activity including engines ground runs at night in accordance with our published Operational Safety Instruction (OSI).	2019	Evidence of development	Publication of Plan	Ground Noise	Communities within and beyond 70dB L _{den}

8 OUR APPROACH TO MANAGING NOISE (THE NOISE ACTION PLAN)

Land use planning and mitigation

To offer insulation and ventilation schemes to local communities, residents and for community buildings to help provide noise mitigation and work with local government to minimise encroachment into high noise impacted areas.

REF	SHORT TITLE	ACTIONS	DATE	PERFORMANCE INDICATOR	TARGET	IMPACT	COMMUNITIES AFFECTED
3.1	Review NIS	We will conduct a review of our noise insulation and mitigation schemes (NIS) by 2021	2021	Evidence of Review	Review report	Arrivals Departures	Communities within 63dB L _{eq}
3.2	QHS	We will complete insulation of registered homes in the Quieter Homes Scheme (QHS) by 2021.	2021	Number of properties registered and insulated	Completion of QHS	Arrivals Departures	Communities within the 2011 69dB L _{eq}
3.3	New NIS	We will implement a new Noise Insulation Strategy by 2023.	2023	Evidence of development	Launch NIS	Arrivals Departures	Communities within 63dB L _{eq}
3.4	CBNIS	Having completed the insulation of all schools in our Community Building Noise Insulation Scheme (CBNIS) we will extend it to include ventilation, completing schools in all current areas.	2023	% Completion of school ventilation	80% by 2023 and 100% within the next regulatory period (H7)	Arrivals Departures	Communities within 63dB L _{eq}
3.5	Annual NIS survey	To help understand the effectiveness of our home insulation schemes we will undertake surveys of recipients to measure their overall satisfaction with the schemes to help inform our 2021 review and beyond.	Annual	Satisfaction measure?	Maintain performance from a 2018 baseline	Arrivals Departures	Communities in the NIS
3.6	Local Planning Guidance	We will proactively work with local authorities to agree local planning principles and guidance consistent with the Noise Policy Statement for England (NPSE) and National Planning Policy Framework (NPPF), to agree noise conditions to be considered for new sensitive developments.	2019	Record of interactions	Publish Principles and Guidance Report	Arrivals Departures	Communities within 55dB L _{den}
3.7	Monitor Encroachment	Through our existing forums with local authorities, we will seek to identify ways to monitor population growth and encroachment to better understand impacts on contours and metrics. This will include working with local authorities to monitor new residential and community building developments on an annual basis, and tracking this with the annual population statistics published with our noise contours.	2020	Methodology identified	Paper with agreed position and performance indicators	Arrivals Departures	Communities within 55 dB L _{den}
3.8	Encroachment Position	With support from the Heathrow Strategic Noise Advisory Group, we will work with community, industry and local government stakeholders to identify a common position on encroachment and new development close to the airport and set this out in a position paper for the Government and general dissemination.	2020	Record of interactions	Position paper submission	Arrivals Departures	Communities within 55 dB L _{den}

Operating restrictions and voluntary measures

We will seek to introduce voluntary measures to address specific issues and, where required, consider introducing operating restrictions

REF	SHORT TITLE	ACTIONS	DATE	PERFORMANCE INDICATOR	TARGET	IMPACT	COMMUNITIES AFFECTED
4.1	Night restrictions	We will continue to implement the night restriction regime in line with government policy and publish adherence.	On-going	Performance against published limits	Compliance with government requirements	Night Flights	Communities within and beyond 50dB L _{Night}
4.2	QNC	We will work with airlines and NATS to develop and support and implement the Quiet Night Charter aimed to provide and support predictable operations, fewer off-schedule movements, greater transparency and quieter operations.	2019	TBC eg L _{Night} contour, total/average QC, hours with no night flights, late runners, pre 04:30	A year on year measurable improvement in night noise mitigation including reduced QC and improved respite	Night Flights	Communities within and beyond 50dB L _{Night}
4.3	ATM Cap	We will continue to adhere to the agreed annual ATM cap as set by Terminal 5 planning conditions.	Annual	Annual ATM	Compliance with ATM Cap	Arrivals Departures	Communities within and beyond 55dB L _{den}

Working with local communities

To engage openly and constructively with local communities to understand and, where possible, address their concerns

REF	SHORT TITLE	ACTIONS	DATE	PERFORMANCE INDICATOR	TARGET	IMPACT	COMMUNITIES AFFECTED
5.1	Communications	We will continue to build on and improve our communications and tools provided to residents including the use of visual aids, research reports, annual contours and community information reports. We will review the use of our current online webtools (Webtrak, Webtrak My Neighbourhood, xPlane, etc), as well as the operational and noise chapter data we publish, and seek stakeholder feedback on how they are presented.	2021	Where applicable, tracking use of web-based tools, e.g. website page views	Respond to feedback and review our flight tracking tools by 2021	Community Trust and Awareness	Communities within and beyond 55dB L _{den}
5.2	Runway notifications	We will continue to build and improve on our Twitter service which provides real-time runway updates to local communities. This will include: why runway end changes are taking place, accompanied by information such as wind speed and direction at ground level and 3000ft; unscheduled changes to the published runway alternation due to an emergency or severe weather conditions; information on night flights.	On-going	Evidence of reviews of Twitter service etc	Evidence of regular, timely updates	Community Trust and Awareness	Communities within and beyond 55dB L _{den}
5.3	HCNF and Independent Advisor	We will continue to support the Heathrow Community Noise Forum (HCNF), provide regular updates from our external activities such as ANMAC, ANEG and ICAO, and fund an independent advisor to the Forum.	2019	HCNF attendance	Advisor appointed to support HCNF	Community Trust and Awareness	Communities within and beyond 55dB L _{den}
5.4	Noise Monitoring Terminal (NMT) deployment	We will agree and publish an annual noise monitor deployment plan.	Annual	Agreed Plan established	NMT Deployed according to agreed plan.	Community Trust and Awareness	Communities within 55dB L _{den}
5.5	NTK verification	In the case of a substantive change in the NTK architecture, we will publish a NTK system verification report.	NA	NTK change tracking	Verification report published	Community Trust and Awareness	Communities within 55dB L _{den}

8 OUR APPROACH TO MANAGING NOISE (THE NOISE ACTION PLAN)

Working with local communities (continued)

REF	SHORT TITLE	ACTIONS	DATE	PERFORMANCE INDICATOR	TARGET	IMPACT	COMMUNITIES AFFECTED
5.6	Community Fund	We will continue to direct all money raised by departure noise infringements to the Heathrow Community Fund to distribute to community projects in the Heathrow airport area, and provide an annual publication of list of community projects funded by the fines.	NA	Grant money given to Community Projects	Annual report of funded projects	Community Trust and Awareness	Communities within 55dB L _{den}
5.7	Publish Fines	From 2019 onwards, we will publish the total and individual fines each year on our Noise website and annual report.	Annual	Process for publication established	Annual data publication	Arrivals Departures	NA
5.8	Complaints management system	By the end of 2020, we will conduct a study on complaint and noise communications management, get feedback on the services we offer and investigate new approaches in order to continually improve our practices	2020	Complainant statistics and analysis published quarterly	Report on complaint management published	Community Trust and Awareness	NA
5.9	Opinion Polling	We will continue to carry out annual polling of residents living in the 12 boroughs and within the 55dB L _{den} contour surrounding Heathrow to establish and track opinions in relation to the airport and the % of residents who believe Heathrow is working to keep the impact of noise to a minimum.	Annual	% residents agreeing with question	To present findings to stakeholder groups at least once per year	Community Trust and Awareness	NA
5.10	Annual contours	We will annually commission the production and reporting of the noise contours report to include summer contours (L _{eq} 16hr day), night (L _{eq} 8hr, L _{eq} 6.5hr) and 'END strategic mapping' noise contours (L _{den} , L _{day} , L _{night}) as well as additional supplementary contours and information.	Annual	Evidence of commissioning	Publish the contour report by the end July each year	Community Trust and Awareness	NA
5.11	Forecast contours	We will develop our forecasting process and issue forecast contours for a five-year projection, annually, and for a 10-year projection, every five years. These will be shared with local councils. We will also conduct WebTAG-like impact analyses on the forecasts taking population growth into account.	Annual	Evidence of process development	Annual 5-year projected contours published	Community Trust and Awareness	NA
5.12	CoE	As a part of our Centre of Excellence (CoE) for Sustainability we will host events (e.g. each two years) to share best practice on effective noise management issues, and conduct a benchmarking study on global best practice every five years.	2021	Events hosted	Benchmarking study on best practice	Community Trust and Awareness	NA
5.13	Research	We will develop and promote a roadmap for research identifying priority research gaps, seek to promote and influence the research agenda (internationally and locally) and support relevant research, through our CoE, ACI and attendance at conferences. We will continue to conduct research on key topics such as respite and trialling innovative approaches to managing noise.	2019	Evidence of research-based activities		Community Trust and Awareness	NA
5.14	Health research updates	We will continue to publish up to four noise and health research updates a year through the Heathrow Community Noise Forum (HCNF).	Annual	Reports being compiled	Quarterly reports published	Community Trust and Awareness	NA

REF	SHORT TITLE	ACTIONS	DATE	PERFORMANCE INDICATOR	TARGET	IMPACT	COMMUNITIES AFFECTED
5.15	Noise Action Plan Reviews	We will annually review and update the Noise Action Plan as necessary and agree and advise on any updated actions through the Heathrow Strategic Noise Advisory Group (HSNAG) and Heathrow Community Noise Forum (HCNF). We will formally review the Noise Action Plan following publication of the strategic noise maps for 2021 and initiate a consultation on any proposed amendments in line with government guidance.	2022	Evidence of reviews	Annual and 5-year Noise Action Plan review	Community Trust and Awareness	NA
5.16	Performance Indicators and progress reports	Through the Noise and Emissions Working Group, we will monitor the performance indicators listed within the action plan on a quarterly basis. Where we determine that further improvement can potentially be achieved we will seek to set an annual target to help address it and we will publish an annual progress report by Q2 each year.	On-going	Maintaining, revising or addition of annual targets	Introduction of new targets as required and publication of annual NAP progress reports	Community Trust and Awareness	NA
5.17	Noise Action Plan Audit	Our performance against the Noise Action Plan will be independently audited annually and the findings and recommendations shared with Heathrow Community Noise Forum (HCNF) and Heathrow Strategic Noise Advisory Group (HSNAG) and implemented as agreed, with the annual audit report published on our website.	Annual	Evidence of commissioning annual audits	Annual audit report	Community Trust and Awareness	NA



9 EVALUATING THE IMPLEMENTATION AND THE RESULTS OF THE NOISE ACTION PLAN

As shown in Section 8, in order to evaluate the effectiveness and delivery of the Noise Action Plan we have:

- established the performance indicators;
- set specific goals and targets where appropriate;
- continued our commitment to providing an annual Noise Action Plan progress report and maintaining an independent audit process to verify statements made in the annual progress report.

We are committed to reporting publicly on our performance against the action plan and the effectiveness of our actions to address noise impacts. Since the first noise action plan was published we have established an independent audit process to verify updates on progress. (See Action 5.17)

Our definition of a performance indicator is that it is a quantifiable measure of performance against a stated objective, long term goal, action and/or annual target. A goal is interpreted as a longer-term SMART (specific, measurable, achievable, realistic, time bound) target. Finally, we use the phrase annual target to define an annual milestone towards achieving the longer-term goal.

Performance indicators

We will monitor the set of performance indicators generally on a quarterly basis to track progress against each area of focus. This will help to ensure that the work we are undertaking is resulting in the maximum benefit in terms of managing noise impacts.

The full range of indicators is set against each of the actions detailed in the Noise Action Plan in Section 8. In some cases this may just be providing evidence to the independent verification auditors that the action has been completed. Our performance against these indicators will be regularly reviewed internally through our environmental governance structure. During the five-year period of this Noise Action Plan, we may add to or amend the range of performance indicators to respond to improvements which enable us to better manage and/or monitor the airport noise impacts. From time to time we may set an annual target against one or more of the performance indicators and include this in our annual reporting.

Goals and targets

For each of the actions we have either set a goal (where the action will take more than a year to deliver) or a specific target date. In some instances the action is drafted in such a way as to be a target in itself.

Note that all target dates given in a particular item refer to 31 December of that year.

Tracking progress

We will produce a summary noise action plan progress report on an annual basis which will detail activity against all of the actions within the plan. In addition, we have identified a number of key performance indicators which will help provide a concise overview of the impact and delivery of the noise action plan. These are set out in Table 9.1 overleaf together with an associated target goal.

As per Action 5.15, after 5 years at the end of the life of this Noise Action Plan, DEFRA will be developing new strategic noise maps for 2021 as a basis for developing the next plan. With this in mind, we have calculated forecast noise contours for L_{den} and L_{night} in the year 2023 and these are presented in Annex 17 along with forecast contour areas, populations and households.

For financial information, please see Annex 17, which contains indicative annual expenditure by Heathrow on noise management activities over the next five years.

9 EVALUATING THE IMPLEMENTATION AND THE RESULTS OF THE NOISE ACTION PLAN

<i>KPI</i>		<i>ASSOCIATED TARGET OR GOAL</i>
Key END Summary statistic		
KPI 1	Area of noise contours for annual average – 55dBA L_{den} , 55dBA L_{night} 8 hr, N70=50, N65=50 and N60=10; and summer average day – 57dBA L_{eq} 16 hr and 69dBA L_{eq} 16 hr	To reduce the area and population (relative to a fixed population database) within the contours over the course of the action plan.
Quieter planes: Measures of fleet mix		
KPI 2	Moving annual percentage of fleet mix movements within the charging categories	No Chapter 3 aircraft movements by 2020; continue to increase use of Chapter 14 aircraft from 2016 baseline.
KPI 3	Percentage of A320-family movements by retrofitted aircraft	Target 90% by end 2020.
Quieter procedures: Measures of operation performance		
KPI 4	a. Track keeping compliance (excluding 09RCPT) and b. CDA	Track keeping – minimum 96.5% in a calendar year. CDA – minimum 88% in a calendar year.
KPI 5	In Fly Quiet and Green, the number of green dot performance ratings.	More green score dots than Q4 2018 baseline.
Land-use planning and mitigation: Measure of implementation of schemes		
KPI 6	a. Number and percentage of eligible properties registered. b. Number and percentage of registered properties with completed insulation installation.	a. Registrations driven as per policy published on website b. 100% installation within 18 months of registration.
KPI 7	Rate of overall satisfaction with the insulation scheme from new four-part staged survey	From the 2018 baseline improve by 5% by 2023.
Operational restrictions: Measure of night time respite		
KPI 8	For the period 23:30-04:30: a. Number of nights with no arrivals or departures b. Number of nights without non-dispensed flights. Reported monthly with Moving Annual Total, MAT	TBC once 2018 and QNC baselines established.
Working with local communities		
KPI 9	Public perception of Heathrow as rated by annual polling	10% improvement on 2018 baseline by 2023.
General Noise Action Plan processes		
KPI 10	Percentage of actions on track or complete.	At least 90% of actions considered to be on track or complete verified by annual audit.

Table 9.1: Key performance indicators

This page is left intentionally blank



[heathrow.com/noise](https://www.heathrow.com/noise)

© Heathrow Airport Limited 2019
NND 6680 0219

Heathrow