

NOISE ACTION PLAN 2019-2023

SUPPORTING ANNEXES

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



Heathrow



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

1 GLOSSARY OF TERMS

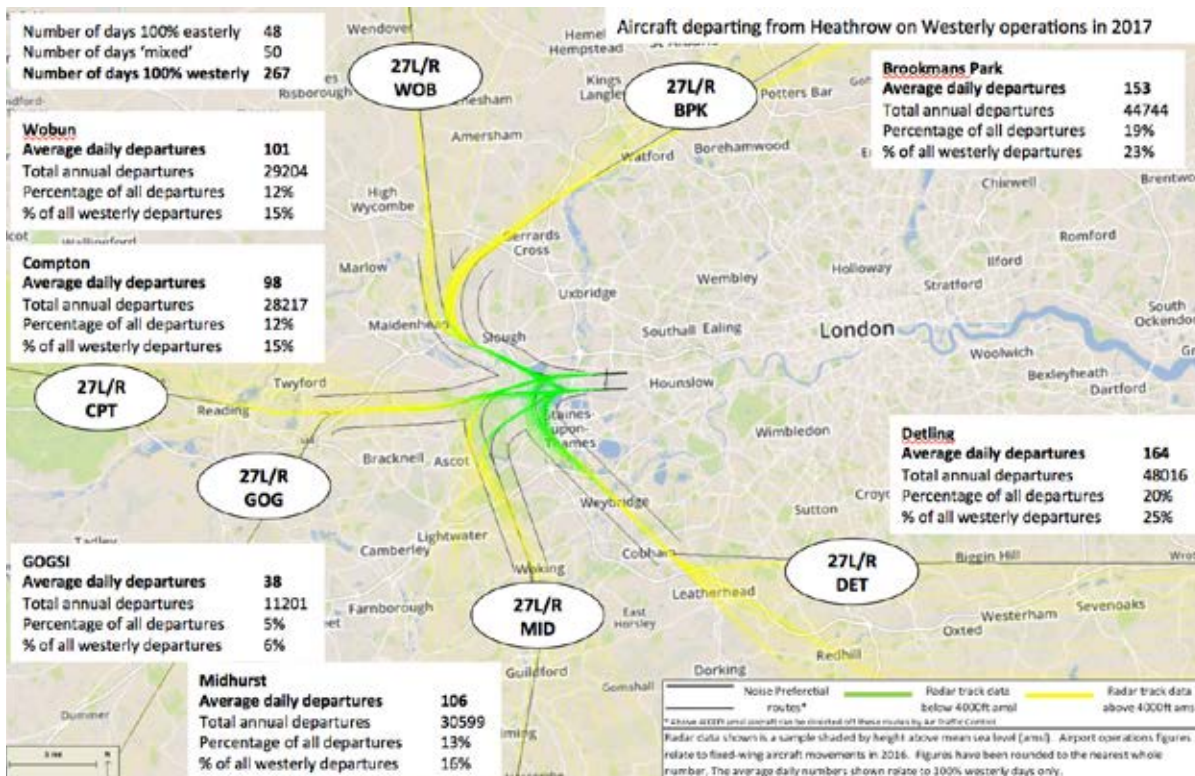
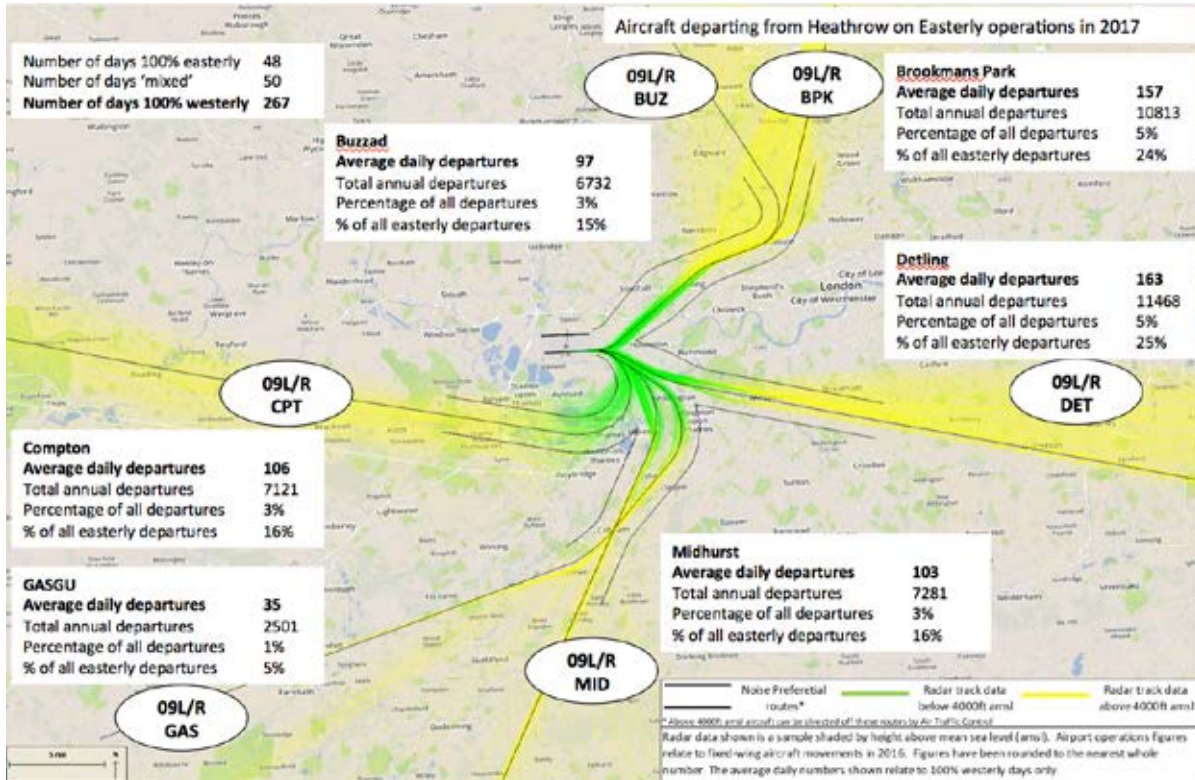
aal	above aerodrome level
AIP	Aeronautical Information Package
ACI	Airports Council International
ACOP	Arrivals Code of Practice
ANCON 2	Aircraft Noise Contour Model version 2
ANEG	Aircraft Noise Engagement Group
ANMAC	Aircraft Noise Monitoring Advisory Committee. The committee is chaired by the Department for Transport and comprises, among others, representatives of the airlines, Heathrow, Gatwick and Stansted airports and airport consultative committees
ANPS	Airports National Policy Statement
APF	Aviation Policy Framework
APU	Auxiliary Power Unit. A power unit located on the aircraft
ATC	Air Traffic Control
ATM	Air Traffic Movement
CAA	Civil Aviation Authority
CDA	Continuous Descent Approach (Operations)
Ch	Chapter (in the context of the ICAO Noise Certification for aircraft)
CoE	Centre of Excellence
dBA	A unit of sound pressure level, adjusted in accordance with the A weighting scale which takes into account the increased sensitivity of the human ear at some frequencies
Decibel (dB)	The decibel (dB) is a logarithmic unit of measurement that expresses the magnitude of a physical quantity relative to a specified or implied reference level. Its logarithmic nature allows very large or very small ratios to be represented by a convenient number. Being a ratio, it is a dimensionless unit. Decibels are used for a wide variety of measurements including acoustics, and for audible sound A-weighted decibels (dBA) are commonly used
DEFRA	Department for Environment Food and Rural Affairs (UK Government)
DfT	Department for Transport (UK Government)
ERCD	Environmental Research and Consultancy Department of the Civil Aviation Authority
FEGP	Fixed Electrical Ground Power
FLOPSC	Flight Operations Performance and Safety Committee
FPU	Flight Performance Unit
FQG	Fly Quiet and Green, Heathrow's programme for ranking the noise and emissions performances of each airline and its fleet
GNMP	Ground Noise Management Plan
GPU	Ground Power Unit
HACC	Heathrow Airport Consultative Committee
HAL	Heathrow Airport Limited
HSNAG	Heathrow Strategic Noise Advisory Group
ICAO	International Civil Aviation Organization
ICCAN	Independent Commission on Civil Aviation Noise
ILS	Instrument Landing System

L_{day}	The A-weighted average sound level over the 12 hour day period of 07:00-19:00
L_{den}	The day, evening, night level, L _{den} is a logarithmic composite of the L _{day} , L _{evening} , and L _{night} levels but with 5 dB(A) being added to the L _{evening} value and 10 dB(A) being added to the L _{night} value
L_{dn}	The Day-Night noise level, sometimes written as DNL
L_{eq}	Equivalent sound level of aircraft noise in dBA, often called equivalent continuous sound level. For conventional historical contours this is based on the daily average movements that take place in the 16 hour period (07:00-23:00 local time) during the 92 day period 16 June to 15 September inclusive
L_{evening}	The A-weighted average sound level over the four hour evening period of 19:00-23:00
LPA	Local Planning Authority
L_{night}	The A-weighted average sound level over the eight hour night period of 23:00-07:00
NATS	Formerly known as National Air Traffic Services Ltd. NATS is licensed to provide en-route air traffic control for the UK and the Eastern part of the North Atlantic, and also provides air traffic control services at several major UK airports, including Gatwick
NEWG	Noise and Emissions Working Group
Noise Contour	Map contour line indicating noise exposure in dB for the area that it encloses
Noise Respite	Predictable periods of relief from noise
NJM	Night jet movement
NMT	Noise Monitoring Terminal
NPPF	National Planning Policy Framework
NPR	Noise Preferential Route
NPSE	National Policy Statement for England
NTK	Noise and Track Keeping monitoring system. The NTK system associates radar data from air traffic control radar with related data from both fixed (permanent) and mobile noise monitors at prescribed positions on the ground
OSI	Operational Safety Instructions
PBN	Performance-Based Navigation
PNL	Perceived Noise Level, measured in PNdB. Its measurement involves analyses of the frequency spectra of noise events as well as the maximum level
PPG	Planning Policy Guidance
QC	Quota Count – the basis of the London airports night restrictions regime
QHS	Quieter Homes Scheme
QNC	Quiet Night Charter
SEL	Sound Exposure Level. The level generated by a single aircraft noise event at the monitoring point. This is normalised to a one second burst of sound and takes account of the duration of the sound as well as its intensity
SOP	Standard Operating Procedures
SOR	Start-of-roll: The position on a runway where aircraft commence their take-off runs
SoS	Secretary of State
Sustainable Aviation	A UK aviation industry initiative aiming to set out a long term strategy for the industry to address its sustainability issues

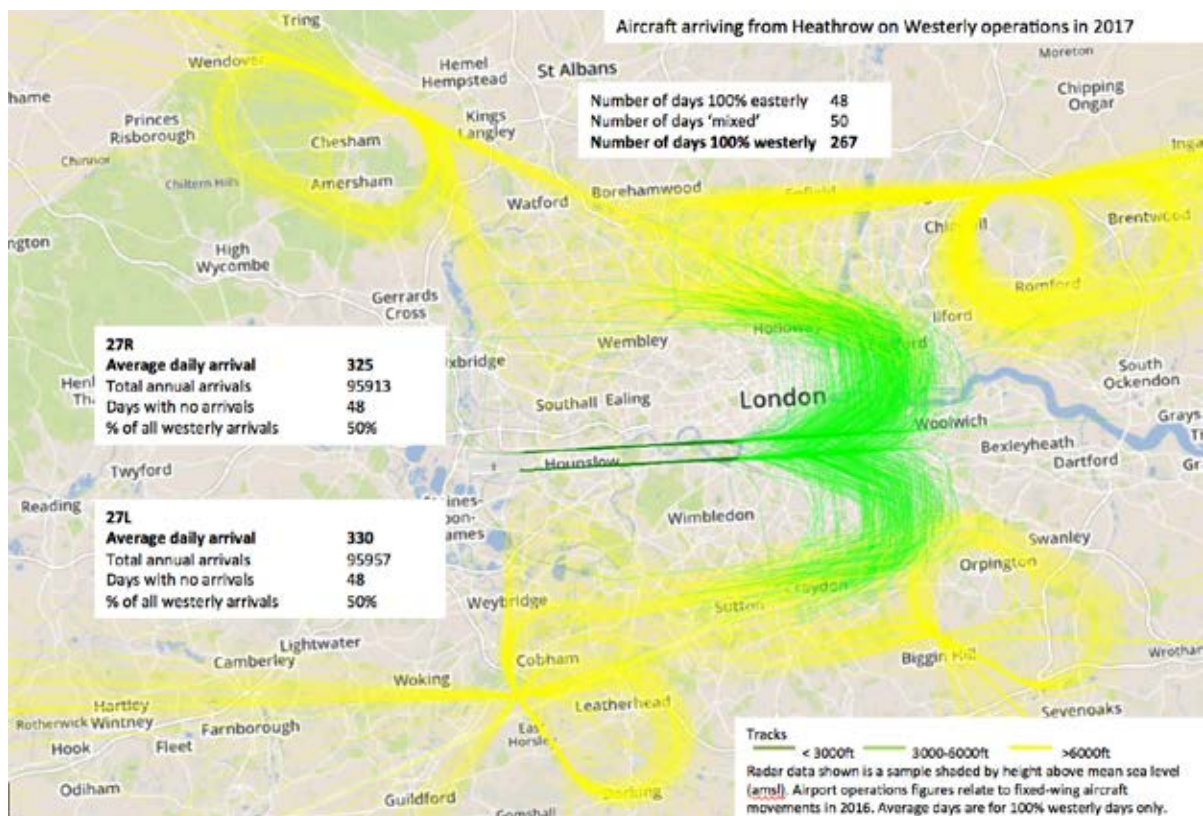
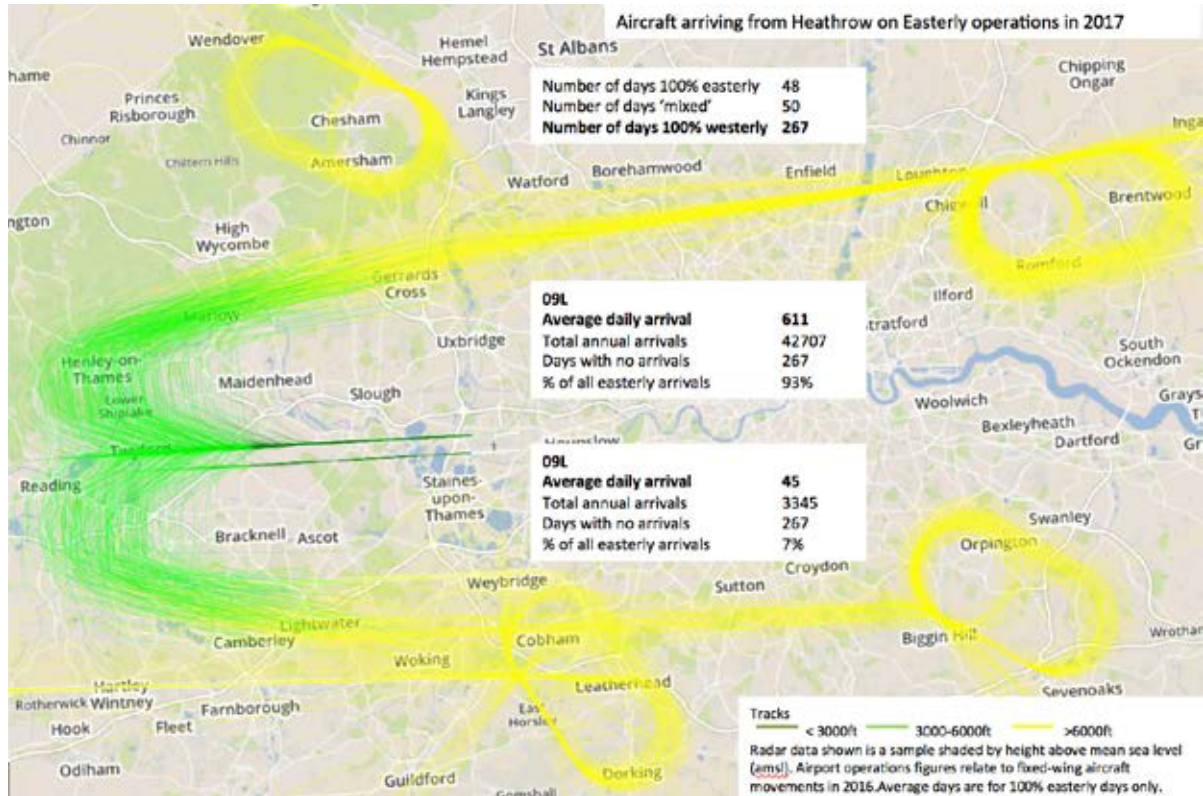
2 AIRFIELD MAP



3 TYPICAL DAILY FLIGHT PATHS



3 TYPICAL DAILY FLIGHT PATHS



4 COMMUNITY RESPONSE TO NOISE

Community engagement

Understanding the concerns of local residents is important for informing our approach to managing aircraft noise. As part of our commitment to being open and constructive with local communities we regularly hold meetings with local residents, community groups and local councils. Our established forums are: the Heathrow Community Engagement Board (HCEB), Local Focus Forum (LFF), Heathrow Strategic Noise Advisory Group (HSNAG) and in since 2015 the Heathrow Community Noise Forum (HCNF).

The HCNF is made up of local councillors and community groups from 12 boroughs around Heathrow, as well as representatives from NATS, British Airways, Virgin, the Department for Transport (DfT) and the Civil Aviation Authority (CAA). It was set up in 2015 to establish a common level of understanding of Heathrow's operations amongst community representatives and stakeholders following strong concerns raised by communities during the 2014 airspace trials. Its main objective is to involve Forum members in the planning and delivery of Heathrow's future airspace changes, along with the steps we are taking to reduce the noise impacts of our operations today. More information about the Forum can be found here: www.heathrow.com/hcnf

Noise complaints

The Heathrow Community Relations team manages complaints from residents about aircraft noise. During 2017, 2,775 people complained to the team, making 78,794 complaints. This compares to 4,661 people in 2016 making 101,039 complaints.

Most people who contacted Heathrow in 2017 made one complaint (56.4% of total people). However, 61.6% of complaints received were made by 10 people (48,562 complaints).

Figure 4.1 below and Table 4.1 overleaf show the number of people making complaints and the number of complaints each year from 2008 to 2017. The significant increase in the number of people complaining in 2014 was brought about by Heathrow's airspace trials that year. Although the trials ended in 2014 with aircraft returning to the pre-trial routes, the number of complaints have remained higher than before the 2014 trials. However, the number of people complaining in 2017 returned to similar levels to before 2014.

Complaint reports are available on the Heathrow noise website www.heathrow.com/noise

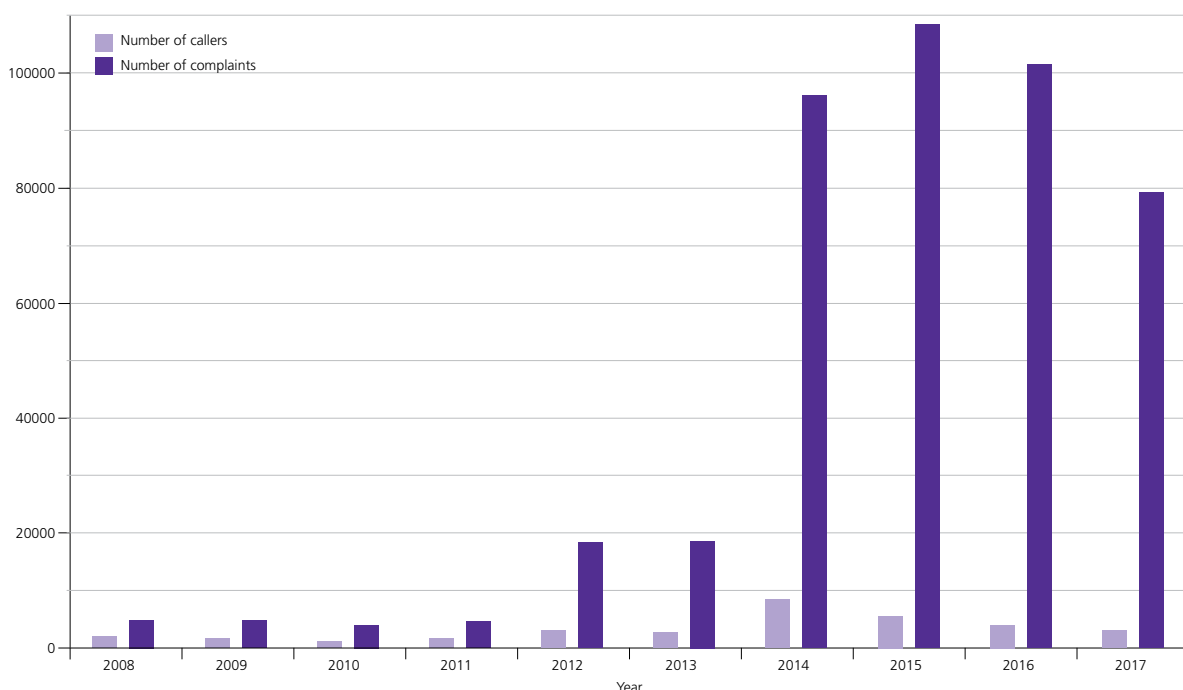


Figure 4.1: Number of people and complaints relating to aircraft noise

4 COMMUNITY RESPONSE TO NOISE

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Callers	2,071	1,651	1,206	1,580	2,992	2,769	8,458	5,573	4,661	2,775
Complaints	5,002	4,715	4,074	4,652	18,318	18,717	95,987	108,255	101,039	78,794

Table 4.1: Number of people and complaints relating to aircraft noise

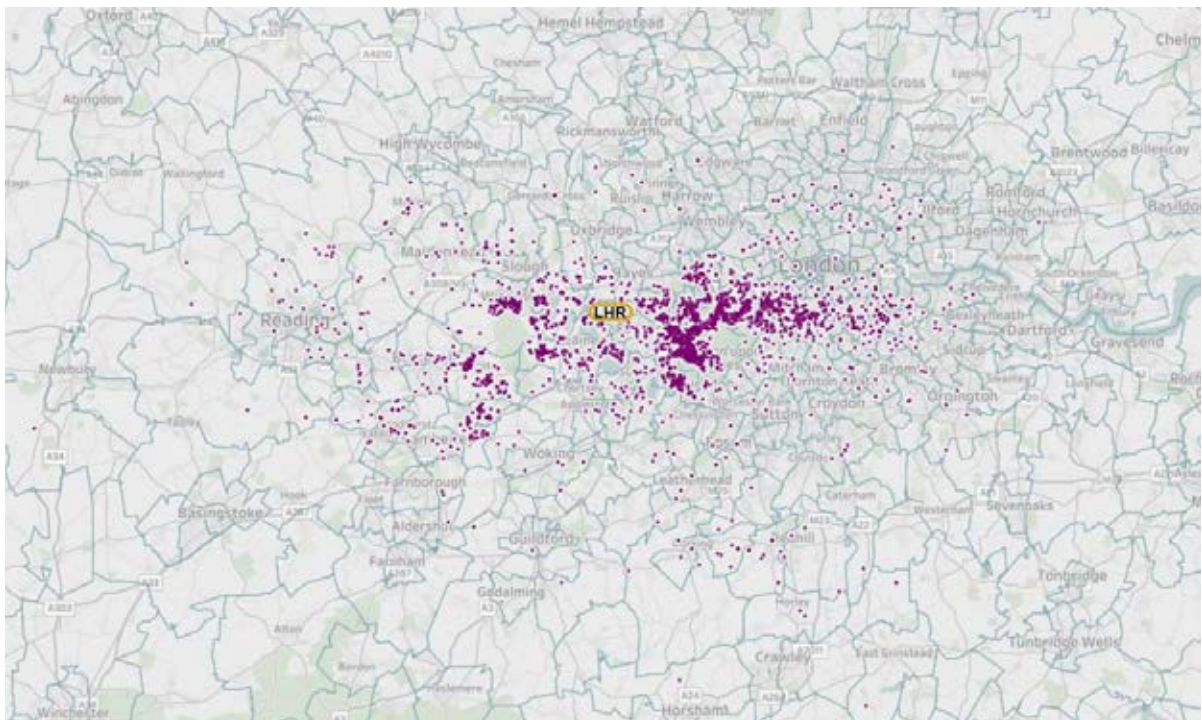


Figure 4.2: Location of complainants 2017

5 LIMIT VALUES IN PLACE AT HEATHROW

LIMIT VALUE

- a** Under Terminal 5 Planning Condition A4, the number of air transport movements at Heathrow Airport shall be limited to 480,000 each year.
- b** With effect from 1 January 2016, the area enclosed by the 57dBAL_{eq}16hr (07:00-23:00) contour, when calculated and measured by the CAA's Aircraft Noise Contour Model, or any system that succeeds it, shall not exceed 145km². The area of the 57dBA L_{eq}16hr (07:00-23:00) in 2016 was 101.5 km² and in 2017 it was 93.2 km².
- c** Limit the 6.5 hour, 48dBA L_{eq} night quota period contour (for the winter and summer seasons combined) to 55km² by 2011–2012. The area of the 48dBA L_{eq} 6.5hr (23:30-06:00) in 2016 was 33.9 km² and in 2017 it was 33.9 km².
- d** Night Movement and Quota Count Restrictions between 23:30 and 06:00 local. See Annex 6
- e** The Noise Abatement Procedures contained within the UK AIP. See Annex 8
- f** Day (07:00-23:00) departure noise limits of 94dBA L_{max} at 6.5 km from start of roll.
- g** Night Shoulder (23:00-23:30 and 06:00-07:00 local) departure noise limits of 89dBA L_{max} at 6.5 km from start of roll.
- h** Night (23:30-06:00 local) departure noise limits of 87dBA L_{max} at 6.5 km from start of roll.

Infringements of AIP Noise Abatement Procedures

Period	2006	2009	2010	2011	2012	2013	2014	2015	2016	2017
Day	34	6	15	16	18	11	9	9	2	6
Night Shoulder	85	26	46	20	12	11	7	17	19	10
Night	97	39	66	36	43	21	19	10	15	6

- i** The Ground running restrictions are set out in Annex 7.

6 NIGHT RESTRICTIONS

The following summarises the information that Heathrow provides on its night restrictions. UK's night flying restrictions were reviewed by the government and new guidelines were published in 2017.

What is the issue?

Noise created by aircraft at night may cause more disturbance to some people because there is less background noise from other sources and the majority of people will be trying to sleep. Similarly, night noise may appear worse in the summer because people tend to sleep with windows open more frequently.

Is there a ban on night flights?

Heathrow has always been a 24 hour operation airport. There is not, and never has been, a complete night time ban or curfew. However, for the reasons above and in order to try to balance the interests of the local communities and those of the airports users, there are restrictions and rules regarding night flights.

Who makes the restrictions?

The Department for Transport (DfT) is responsible for making the restrictions on the types of aircraft that can be scheduled to fly at night. In setting the restrictions the aim has been to maintain a balance between the need to protect local communities from too much aircraft noise at night and the operation of services where they provide economic benefits.

Heathrow does not set the rules but strictly monitors compliance with all Government restrictions in force. We report regularly to the DfT and the Heathrow Airport Consultative Committee (HACC). This is an independent consultative forum made up of representatives of local authorities, councillors, businesses and airlines and the DfT.

What are the restrictions?

Aircraft are certified by the International Civil Aviation Organisation (ICAO) according to the noise they produce. They are classified separately for both take off and landing.

The night flying restrictions are divided into summer and winter seasons, based on daylight savings time. Each season there are two limits – one on movements and the other based on a quota count

(QC) system. The QC system involves aircraft being allocated points based on their certified noise levels for both take-off and landing. The noisier the aircraft type, the higher the points allocated. This provides an incentive for airlines to use quieter aircraft types.

Night Period and Night Quota Period

The 'Night Period' is 23:00 to 07:00 local during which period the noisiest types of aircraft (classified QC/8 and QC/16) may not be scheduled to land or take-off.

The 'Night Quota Period' is from 23:30 to 06:00 local, during which period aircraft movements are restricted by a limit on the number of movements with noise quotas as an additional measure. These number of movements and quota counts allowed are set for each season as opposed to each night.

The Quota Count system

Aircraft are given quota count (QC) classifications as follows:

CERTIFIED NOISE LEVEL (EPNDB)	QUOTA COUNT
More than 101.9	QC/16
99 – 101.9	QC/08
96 – 98.9	QC/04
93 – 95.9	QC/02
90 – 92.9	QC/01
87 – 89.9	QC/0.5
84 – 86.9	QC/0.25
81 – 83.9	QC/0.125

What about the aircraft quieter than 81 EPNdB?

Aircraft quieter than 81 EPNdB have QC/0 and are thus they are effectively exempt from the noise quotas, but as of 2018 their movements are counted towards the movement limit. Before 2017, the QC/0 aircraft were exempt from the movement count.

Movements limits and noise quotas at Heathrow

The movement limits and noise quotas for current and future years / seasons are:

	2005/ 06	2015/ 16	2017/ 18	2018/ 19	2019/ 20	2020/ 21	2021/ 22	2022/ 23
WINTER MOVEMENTS	2550	2550	2550	2550	2550	2550	2550	N/A
WINTER QC	4141	4080	4080	2415	2415	2415	2415	N/A
SUMMER MOVEMENTS	3250	3250	3250	3250	3250	3250	3250	3250
SUMMER QC	5610	5100	5100	5100	2735	2735	2735	2735

The summer season is the period of British Summer Time in any one year. The winter season is the period between the end of British Summer Time in one year and the start of British Summer Time in the next.

End of season flexibility

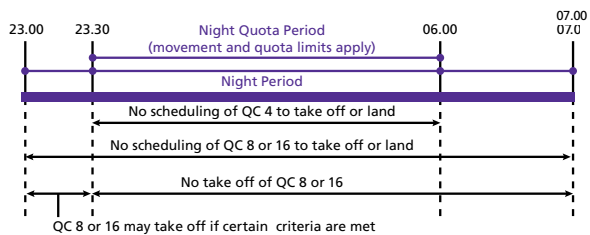
Left over movements – Up to 10% of the current season's movements limit may be carried over if sufficient amount of the limit has not been used.

Overrun of movements – Also, up to 10% of the next season's movements limit may be anticipated in the event of an overrun. Any excess overrun is penalised in the following season at double the amount of the excess.

The same arrangements apply to the noise quotas.

What is not allowed?

- Any aircraft which has a quota count of four, eight, or 16 may not be scheduled to take off or land between 23:30 and 06:00 local
- Any aircraft which has a quota count of eight or 16 (i.e. the noisiest) may not be scheduled to take off or land between 23:00 and 07:00 local
- Any aircraft which has a quota count of eight or 16 may not take off between 23:00 and 07:00 local. However, between 23:00 and 23:30 local, it may take off if:
 - It was scheduled to take off before 23:00 local
 - The take-off was delayed for reasons beyond the control of the aircraft operator; and
 - The airport authority has not given notice to the aircraft operator precluding take-off.
 These restrictions are summarised below:



Dispensations

The Secretary of State has the power to state circumstances in which movements may be disregarded from the night restrictions. This is in exceptional circumstances only.

How is compliance to the restrictions monitored?

Night flights are closely monitored by BAA on a daily basis. We provide the HACC and the DfT, with regular reports on the use of the movements limits and the noise quotas, details of any dispensations or exemptions granted and any movements by QC/8 and QC/16 aircraft during the night period.

All dispensations granted by the airport have to be reported to the DfT in writing within a maximum of one week from when the flight took place.

Future review

The night flights regime is reviewed by the DfT every five years. The DfT is expected to consult on the new regime in 2021 for commencement in Autumn 2022.



7 PLANNING CONDITIONS FOR TERMINAL 4 AND TERMINAL 5

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 include:

Terminal 4

- Except in an emergency, no live aircraft movements or activities involving the running of aircraft engines to be permitted to, from or onto stands 401-403, 429-432 and 463, between the hours of 23:30 and 06:00 local.
- Access to or egress from the Terminal site by taxiing aircraft between 23:30 and 06:00 is prohibited on the taxiway route "S" west of "V" apron or through "Link 41" to SB1 and reverse, except in an emergency or as a consequence of essential maintenance work on the alternative access routes. This restriction does not apply to aircraft taxiing to or from Terminal 4.
- Except in an emergency, no Auxiliary Power Units (APUs) may be operated on stands 401-403, 429-432 and 463 between the hours of 23:30 and 06:00 local.
- Other than the routine servicing of aircraft on turnaround, no aircraft maintenance work which involves the running of aircraft engines is permitted on the Terminal 4 site at anytime.

Terminal 5

- Under Terminal 5 Planning Condition A4, the number of air transport movements at Heathrow airport shall be limited to 480,000 each year.
- With effect from 1 January 2016, the area enclosed by the 57dB(A) $L_{eq}16hr$ (07:00-23:00) contour, when calculated and measured by the CAA's Aircraft Noise Contour Model, or any system that succeeds it, shall not exceed 145 square kilometres.
- The recording and management criteria for engine testing will be extended to cover the Terminal 5 application site without any increase in the current maximum and average period of testing permitted for Heathrow with four terminals:

- the total ground running time in any one night period shall not exceed 150 minutes
- the total ground running time at high power in any one night period shall not exceed 60 minutes
- the ground running time at high power in the night period shall not exceed a rolling 30 day average of 20 minutes.
- In addition to the overall airport constraint on permitted periods for engine ground running, any run on any stand on the Terminal 5 application site at idle power will not exceed ten minutes for any single engine.
- Between 23:00 and 07:00 local only, check starts (maximum five minute duration) will be permitted on any stand on the Terminal 5 application site.
- During the night quota period (23:30-06:00 local), aircraft arriving at the Terminal 5 application site, and aircraft scheduled to depart from it in that period, will use the stands closest to the centre of the site, i.e furthest away from Longford and Stanwell, in preference to the outer stands. This would apply to both the core building and the satellites.
- During the night quota period (23:30-06:00 local), and except in an emergency or for maintenance of the runway and taxiway system, taxiing operation to the north and south of the Terminal 5 application site will be restricted to inner taxiways only. These operational constraints will be applied through Heathrow ATC in the same way as the current taxiing constraints on Terminal 4 are implemented to ensure compliance.
- No pier served stand within the Terminal 5 application site shall be used for live aircraft movements until there is available to that stand a supply of PCA.
- Aircraft arriving at the Terminal 5 application site under engine power, and aircraft scheduled to leave the application site under engine power, during the night quota period shall be allocated a centre stand in preference to any other stand; provided that if all centre stands are so allocated or unavailable for use for any reason, such aircraft may be allocated to another stand.

8 AIP NOISE ABATEMENT PROCEDURES HEATHROW (AS OF 24 MAY 2018)

EGLL AD 2.20 LOCAL TRAFFIC REGULATIONS (continued)

- (ii) A380 pilots are reminded that a long landing roll will infringe the Extended Instrument Landing System Localiser Critical Area. This increases the likelihood of the following aircraft having to break off its approach if unable to continue visually. Pilots are advised that the furthest preferred exit for each runway is as follows: 09L - A5; 09R - S4E and N4E; 27L - S6 and N7; 27R - A11.
 - (iii) **Aircraft lands but cannot contact Heathrow Ground due to RTF congestion:** In this case the pilot should completely vacate the landing runway and taxi into the first taxiway available. The pilot should then hold position until contact with GMC can be established.
- (c) Aircraft Separation
- (i) In certain weather conditions 2.5 nm radar separation may be applied on final approach. The conditions when this separation may be utilised are:
 - (1) Visibility and cloud ceiling equal to or better than 10 km and 1500 ft with a minimum recommended headwind component of approximately 10 kt.
 - (2) Braking action is good.
 - (3) When aircraft involved in the procedure are being operated normally. It is the pilot's responsibility to inform ATC if they are operating their aircraft other than in the normal manner.
 - (4) Speed on final approach and 2.5 nm separation from preceding traffic must be stabilised by 8 nm.

7 Training

Not applicable

EGLL AD 2.21 NOISE ABATEMENT PROCEDURES

Notice under Section 78(1) of the Civil Aviation Act 1982

Whereas:

(1) By virtue of the Civil Aviation (Designation of Aerodromes) Order 1981 (a) Heathrow Airport – London is a designated aerodrome for the purpose of Section 78 of the Civil Aviation Act 1982 (b);

(2) the requirements specified in this notice appear to the Secretary of State to be appropriate for the purpose of limiting, or of mitigating the effect of, noise and vibration connected with the taking off or, as the case may be, landing of aircraft at Heathrow Airport – London;

Now, therefore, the Secretary of State, in exercise of the powers conferred on him by Section 78 (1) and (12) of the Civil Aviation Act 1982, by this notice published in the manner prescribed by the Civil Aviation (Notices) Regulations 1978 (c), hereby provides as follows:

1 This notice may be cited as the Heathrow Airport – London (Noise Abatement Requirements) Notice 2010 and shall come into operation on 1 July 2010.

2. The Heathrow Airport – London (Noise Abatement Requirements) Notice 2004 (d) is hereby revoked.

3 It shall be the duty of every person who is the operator of any aircraft which is to take off or land at Heathrow Airport – London to secure that, after the aircraft takes off or, as the case may be, before it lands at the aerodrome the following requirements are complied with:

1. After take-off the aircraft shall be operated in such a way that it is at a height of not less than 1000 ft aal at 6.5 km from start of roll as measured along the departure track of that aircraft.

2. The sites of the noise monitoring terminals relating to Heathrow Airport – London are:

Description	OS Co-ordinates	Elevation above aerodrome	Latitude	Longitude
Site 6: Thames Water, Wraysbury	TQ 0204 7510	-6 m	*512756N	0003157W
Site 19 (A): Colnbrook	TQ 0263 7700	-4 m	*512857N	0003124W
Site 18 (B): Poyle	TQ 0278 7647	-4 m	*512840N	0003117W
Site 17 (C): Horton	TQ 0219 7566	-6 m	*512814N	0003148W
Site 15 (D): Coppermill	TQ 0197 7477	-7 m	*512745N	0003201W
Site 14 (E): Wraysbury Reservoir (South)	TQ 0169 7409	-7 m	*512724N	0003216W
Site 11 (F): Hounslow West	TQ 1151 7606	-3 m	*512821N	0002345W
Site 12 (G): Hounslow Cavalry Barracks	TQ 1166 7560	-3 m	*512806N	0002338W
Site 10 (H): Hounslow Heath	TQ 1163 7495	-3 m	*512745N	0002340W
Site 13 (I): East Feltham	TQ 1164 7398	-4 m	*512714N	0002341W

EGLL AD 2.21 NOISE ABATEMENT PROCEDURES (continued)

Description	OS Co-ordinates	Elevation above aerodrome	Latitude	Longitude
Site 20 (J): Hounslow Cavalry Barracks North	TQ 1172 7577	-3m	*512812N	0002334W
Site 21 (K): Hounslow Heath Golf Course	TQ 1148 7462	-4 m	512735N	0002348W

3. Subject to sub-paragraphs (5) and (6) below, any aircraft shall, after take-off, be operated in such a way that it will not cause more than 94 dBA L_{max} by day (from 0700 hours to 2300 hours local time) as measured at any noise monitoring terminal at any of the sites referred to in sub-paragraph (2) above.

4. Subject to sub-paragraphs (5) and (6) below, any aircraft shall, after take-off, be operated in such a way that it will not cause more than 89 dBA L_{max} by night (from 2300 to 0700 hours local time) and that it will not cause more than 87 dBA L_{max} during the night quota period (from 2330 to 0600 hours local time) as measured at any noise monitoring terminal at any of the sites referred to in sub-paragraph (2) above.

5. The limits specified in sub-paragraphs (3) and (4) above shall be adjusted in accordance with the following table in respect of any noise monitoring terminal at any of the sites referred to in the table in sub-paragraph (2) above to take account of the location of that terminal and its ground elevation relative to the aerodrome elevation .

Description	Adjustment dBA
Site 6	minus 0.3
Site 19 (A)	plus 2.3
Site 18 (B)	plus 4.8
Site 17 (C)	minus 0.3
Site 15 (D)	minus 0.6
Site 14 (E)	minus 1.0
Site 11 (F)	plus 0.9
Site 12 (G)	minus 0.1
Site 10 (H)	plus 1.2
Site 13 (I)	minus 0.3
Site 20 (J)	minus 0.2
Site 21 (K)	plus 1.7

6. For the purpose of determining an infringement of the limits specified in sub-paragraphs (3) and (4) above, if the aircraft was required to take-off with a tailwind, an amount of up to 2dB of the noise recorded at the noise monitor should be disregarded. The amount to be disregarded shall be:

- 0.4 dB for a tailwind of up to 1 knot
- 0.8 dB for a tailwind exceeding 1 knot but not exceeding 2 knots
- 1.2 dB for a tailwind exceeding 2 knots but not exceeding 3 knots
- 1.6 dB for a tailwind exceeding 3 knots but not exceeding 4 knots
- 2.0 dB for a tailwind exceeding 4 knots.

For this purpose, tailwind is to be calculated from the wind data measured in the on-airfield anemometers and wind vanes according to the formula:

$$(\text{windspeed} \times \cosine(\text{runway heading} - \text{wind direction})) \times -1.$$

7. Where the aircraft is a jet aircraft, after passing the point referred to in sub-paragraph (1) above, it shall maintain a gradient of climb of not less than 4% to an altitude of not less than 4000 ft. The aircraft shall be operated in such a way that progressively reducing noise levels at points on the ground under the flight path beyond that point are achieved.

8. After the aircraft takes off from any runway specified in the first column of the following table, the aircraft shall follow the Noise Preferential Routing Procedure specified in the third column of the table which relates to the ATC clearance previously given to the aircraft and specified in the second column of the table, whether flying in IMC or VMC:

(a) Provided that nothing in this sub-paragraph (8) shall apply:

- (i) to any propeller driven aircraft whose MTWA does not exceed 5700 kg; or
- (ii) during the period between 0600 hours and 2330 hours (local time), any propeller driven aircraft whose MTWA does not exceed 17000 kg or any Dash 7 aircraft.

Take-off Runway	ATC Clearance	Procedure	Take-off Runway	ATC Clearance	Procedure
27R	Via Woodley	Straight ahead to intercept LON VOR RDL 258 until LON DME 7 then turn right onto	27L	Via Woodley	Straight ahead to intercept LON VOR RDL 258 until LON DME 7 then turn right onto

8 AIP NOISE ABATEMENT PROCEDURES HEATHROW (AS OF 24 MAY 2018)

EGLL AD 2.21 NOISE ABATEMENT PROCEDURES (continued)

Take-off Runway	ATC Clearance	Procedure	Take-off Runway	ATC Clearance	Procedure
		QDM 271 to WOD NDB (LON DME 16).			QDM 271 to WOD NDB (LON DME 16).
	Via Chiltern	Straight ahead to be established on BUR NDB QDM 300 by LON DME 4. At LON DME 6 turn right onto QDM 056 to CHT NDB.		Via Chiltern	Straight ahead to be established on BUR NDB QDM 300 by LON DME 3. At LON DME 6 turn right onto QDM 056 to CHT NDB.
	Via Burnham/UMLAT	Straight ahead to be established on BUR NDB QDM 300 by LON DME 4. At LON DME 7 turn right to follow BUR NDB QDR 358 to abeam BNN VOR (LON DME 16).		Via Burnham/UMLAT	Straight ahead to be established on BUR NDB QDM 300 by LON DME 3. At LON DME 7 turn right to follow BUR NDB QDR 358 to abeam BNN VOR (LON DME 16).
	Via Midhurst	Straight ahead to intercept LON VOR RDL 258 until LON DME 5 then turn left onto BUR NDB QDR 163. At LON DME 12 turn right onto MID VOR RDL 013 to MID VOR.		Via Midhurst	Straight ahead to intercept LON VOR RDL 242 until LON DME 5.5 then turn left onto BUR NDB QDR 163. At LON DME 12 turn right onto MID VOR RDL 013 to MID VOR.
	Via Epsom/ Detling	Straight ahead until LON DME 2 then turn left onto QDM 139 to EPM NDB then left onto DET VOR RDL 273 to abeam Biggin (DET DME 21).		Via Epsom/ Detling	Straight ahead until I-LL DME 1.0 (LON DME 2) then turn left onto QDM 139 to EPM NDB then left onto DET VOR RDL 273 to abeam Biggin (DET DME 21).
09L	Via Woodley	Straight ahead until LON DME 1.5 then turn right onto QDM 283 to WOD NDB (LON DME 16)	09R	Via Woodley	Straight ahead until LON DME 2 then turn right onto QDM 283 to WOD NDB (LON DME 16).
	Via Ockham/GOGSI	Straight ahead until LON DME 1.5 then turn right onto LON VOR RDL 127 until LON DME 5 then right onto OCK VOR RDL 044. At OCK DME 2 turn right onto OCK VOR RDL 255 by OCK DME 3.		Via Ockham/GOGSI	Straight ahead until LON DME 2 then turn right onto LON VOR RDL 127 until LON DME 5 then right onto OCK VOR RDL 044. At OCK DME 2 turn right onto OCK VOR RDL 255 by OCK DME 3
	Via Midhurst	Straight ahead until LON DME 1.5 then turn right onto LON VOR RDL 127 until LON DME 3.5 then turn right onto MID VOR RDL 027 to MID VOR.		Via Midhurst	Straight ahead until LON DME 2 then turn right onto LON VOR RDL 127 until LON DME 3.5 then turn right onto MID VOR RDL 027 to MID VOR.
	Via Detling	Straight ahead until LON DME 1.5 then turn right onto track 123° MAG. At LON DME 4 turn left to establish on DET VOR RDL 285 by DET DME 34 to DET DME 20.		Via Detling	Straight ahead until LON DME 2 then turn right onto track 123° MAG. At LON DME 4 turn left to establish on DET VOR RDL 285 by DET DME 34 to DET DME 20.
	Via ULTIB	Straight ahead until LON DME 1.5 then turn left onto track 052° MAG to intercept LON VOR RDL 073. At LON DME 10 turn left onto BIG VOR RDL 331 to ULTIB.		Via ULTIB	Straight ahead until LON DME 2 then turn left onto track 052° MAG to intercept LON VOR RDL 073. At LON DME 10 turn left onto BIG VOR RDL 331 to ULTIB.
	Via Brookmans Park	Straight ahead until LON DME 1.5 then turn left onto track 052°MAG to intercept LON VOR RDL 073. At LON DME 10 turn left onto BPK VOR RDL 198 to BPK VOR.		Via Brookmans Park	Straight ahead until LON DME 2 then turn left onto track 052°MAG to intercept LON VOR RDL 073. At LON DME 10 turn left onto BPK VOR RDL 198 to BPK VOR.

9. Where the aircraft is approaching the aerodrome to land it shall commensurate with its ATC clearance minimise noise disturbance by the use of continuous descent and low power, low drag operating procedures (referred to in Detailed Procedures for descent clearance in AD 2 paragraphs 3 and 4). Where the use of these procedures is not practicable, the aircraft shall maintain as high an altitude as possible. In addition, when descending on initial approach, including the closing heading, and on intermediate and final approach, thrust reductions should be achieved where possible by maintaining a 'clean' aircraft configuration and by landing with reduced flap, provided that in all the circumstances of the flight this is consistent with safe operation of the aircraft.

10. Subject to sub-paragraph (11) below:

- (a) Between 0600 and 2330 hours (local time) where the aircraft is approaching Runway 27 (L or R) and is using the ILS in IMC or VMC it shall not descend on the glidepath below an altitude of 2500 ft (Heathrow QNH) before being established on the localizer, nor thereafter fly below the glidepath. An aircraft approaching without assistance from the ILS shall follow a descent path which will not result in its being at any time lower than the approach path that would be followed by an aircraft using the ILS glidepath, and shall follow a track to intercept the extended runway centre-line at or above 2500 ft.

EGLL AD 2.21 NOISE ABATEMENT PROCEDURES (continued)

- (b) Between 2330 and 0600 hours (local time) where the aircraft is approaching runway 27 (L or R) and is using the ILS in IMC or VMC it shall not descend on the glidepath below an altitude of 3000 ft (Heathrow QNH) before being established on the localizer at not less than 10nm from touchdown, nor thereafter fly below the glidepath. An aircraft approaching without assistance from the ILS shall follow a descent path which will not result in its being at any time lower than the approach path that would be followed by an aircraft using the ILS glidepath, and shall follow a track to intercept the extended runway centre-line at or above 3000 ft.
- (c) Between 0700 and 2300 hours (local time) where the aircraft is approaching Runway 09 (L or R) and is using the ILS in IMC or VMC it shall not descend on the glidepath below an altitude of 2500 ft (Heathrow QNH) before being established on the localizer, nor thereafter fly below the glidepath. An aircraft approaching without assistance from the ILS shall follow a descent path which will not result in its being at any time lower than the approach path that would be followed by an aircraft using the ILS glidepath, and shall follow a track to intercept the extended runway centre-line at or above 2500 ft.
- (d) Between 2300 and 0700 hours (local time) where the aircraft is approaching Runway 09 (L or R) and is using the ILS in IMC or VMC it shall not descend on the glidepath below an altitude of 3000 ft (Heathrow QNH) before being established on the localizer at not less than 10 nm from touchdown, nor thereafter fly below the glidepath. An aircraft approaching without assistance from the ILS shall follow a descent path which will not result in its being at any time lower than the approach path that would be followed by an aircraft using the ILS glidepath, and shall follow a track to intercept the extended runway centre-line at or above 3000 ft.
11. Nothing in sub-paragraph (10) above shall apply to any propeller driven aircraft whose MTWA does not exceed 5,700 kg.
12. Without prejudice to the provisions of sub-paragraphs (1) - (11) above, the aircraft shall at all times be operated in a manner which is calculated to cause the least disturbance practicable in areas surrounding the aerodrome.
13. The requirements set out in sub-paragraphs (1) - (12) above may at any time be departed from to the extent necessary for avoiding immediate danger or for complying with the instructions of an Air Traffic Control Unit.
- 4 In this notice, except where the context otherwise requires:
- 'local time' means, during any period of summer time, the time fixed by or under the Summer Time Act 1972 (e), and outside that period, Universal Co-ordinated Time;
- 'dBA' means a decibel unit of sound level measured on the A-weighted scale, which incorporates a frequency dependent weighting approximating the characteristics of human hearing;
- Lmax' means the highest instantaneous sound level recorded (with the noise monitoring terminal set at the slow meter setting);
- other abbreviations used are defined in GEN 2-2 of the United Kingdom Aeronautical Information Publication (Air Pilot).

J Hotchkiss
Divisional Manager
Aviation Environmental Division
Department for Transport

7 April 2010

- (a) S.I. 1981/651.
- (b) 1982 c.16.
- (c) S.I. 1978/1303.
- (d) The Heathrow Airport – London (Noise Abatement Requirements) Notice 2004 signed by G Pendlebury on 24 March 2004.
- (e) 1972 c.6.

Notes

(These notes are not part of the notice)

1. The Noise Preferential Routing Procedures specified in the above notice are compatible with normal ATC requirements. The use of the routings specified above is supplementary to noise abatement take-off techniques as used by piston-engined, turbo-prop, turbo-jet and turbofan aircraft.
2. The attention of operators is drawn to the provisions of Section 78 (2) of the Civil Aviation Act 1982, under which if it appears to the Secretary of State that any of the requirements in this notice have not been complied with as respects any aircraft, he may direct the manager of the aerodrome to withhold facilities for using the aerodrome from the operator of the aircraft. However, the Secretary of State accepts that occasional and exceptional breaches of the noise limits, or of the height requirement, would not be expected to lead to sanctions under Section 78 (2). Such breaches would, however, run the risk of financial penalties.
3. Noise from ground running of aircraft engines is controlled in accordance with instructions issued by Heathrow Airport Limited.
4. In the interests of noise abatement, certain restrictions are imposed on the operation of training flights at this aerodrome. Operators concerned are advised to obtain details from Heathrow Airport Limited.
5. To minimise disturbance in areas adjacent to the aerodrome, commanders of aircraft are requested to avoid the use of reverse thrust after landing, consistent with the safe operation of the aircraft, between 2330 hours and 0600 hours (local time).

8 AIP NOISE ABATEMENT PROCEDURES HEATHROW (AS OF 24 MAY 2018)

EGLL AD 2.21 NOISE ABATEMENT PROCEDURES (continued)

6. Full details concerning the maximum number of occasions and the types of aircraft which are permitted to take off or land at night during specified periods at this aerodrome are promulgated by Supplement.
7. For monitoring purposes, a descent will be deemed to have been continuous provided that no segment of level flight longer than 2.5 nautical miles (nm) occurs below 6000 ft QNH and 'level flight' is interpreted as any segment of flight having a height change of not more than 50 ft over a track distance of 2 nm or more, as recorded in the airport Noise and track-keeping system.
8. For monitoring purposes, a departure will be deemed to have complied with the Noise Preferential Routeing (NPR) if, in the portion of flight below the appropriate vectoring altitude (see note 9 below), it is properly recorded by the airport's noise and track-keeping (NTK) system as having flown wholly within the Lateral Swathe (LS). The LS is defined from the centre-line of the relevant route coded in the NTK system, based upon a map accredited for this purpose by the Department for Transport, by the closer to the route centre-line depicted on the map of (a) a pair of lines either side, each diverging at an angle of 10° from a point on the runway centre-line 2000 m from start-of-roll; and (b) a pair of parallel lines representing a distance of 1.5 km either side of the route centre-line. For avoidance of doubt, the depicted route and LS may include curved sections representing turns.
9. Aircraft which have attained an altitude of 4000 ft (Heathrow QNH) may be directed by air traffic controllers onto a different heading and commanders complying with any such direction will not by reason of so complying be deemed to have departed from the Noise Preferential Routeing.

EGLL AD 2.22 FLIGHT PROCEDURES

1 Arrival Routes

- (a) Standard Arrival Routes (STARs) for aircraft inbound via the ATS Route System are detailed at AD 2-EGLL-7-1 to 7-14.
- (b) Aircraft inbound other than via the ATS Route System:
- (i) Aircraft inbound to London Heathrow Airport direct from the London FIR will be required to use the procedures for flights via the ATS Routes System.
 - (ii) Aircraft departing from aerodromes outside the geographical boundary of the London TMA will normally be required to route via one of the Terminal Holding Points detailed in paragraph 2 (b).
 - (iii) Pilots of aircraft departing from an aerodrome less than 10 minutes flying time from the London CTR boundary are to contact the LTCC Group Supervisor Airports on 02380-401106 before departure.
- (c) Aircraft positioning from other London Airports:
- (i) Aircraft positioning from London Gatwick Airport will be cleared via BIG VOR as detailed in AD 2-EGKK-6-2.
 - (ii) Aircraft positioning from London Luton Airport will be cleared via BNN VOR as detailed in AD 2-EGGW-1-14 paragraph 5.

2 Holding

- (a) Terminal Holding Fixes are established at Biggin (BIG), Bovingdon (BNN), Lambourne (LAM) and Ockham (OCK) VORs as detailed on the appropriate STAR charts. Alternate holding fixes for use when the primary VOR is out of service are established at WEALD, BOVVA, TAWNY and TOMMO respectively. Aircrew are not required to state time and level when entering/reaching the holding fix.
- (b) Holding patterns for use following a missed approach are established as follows:

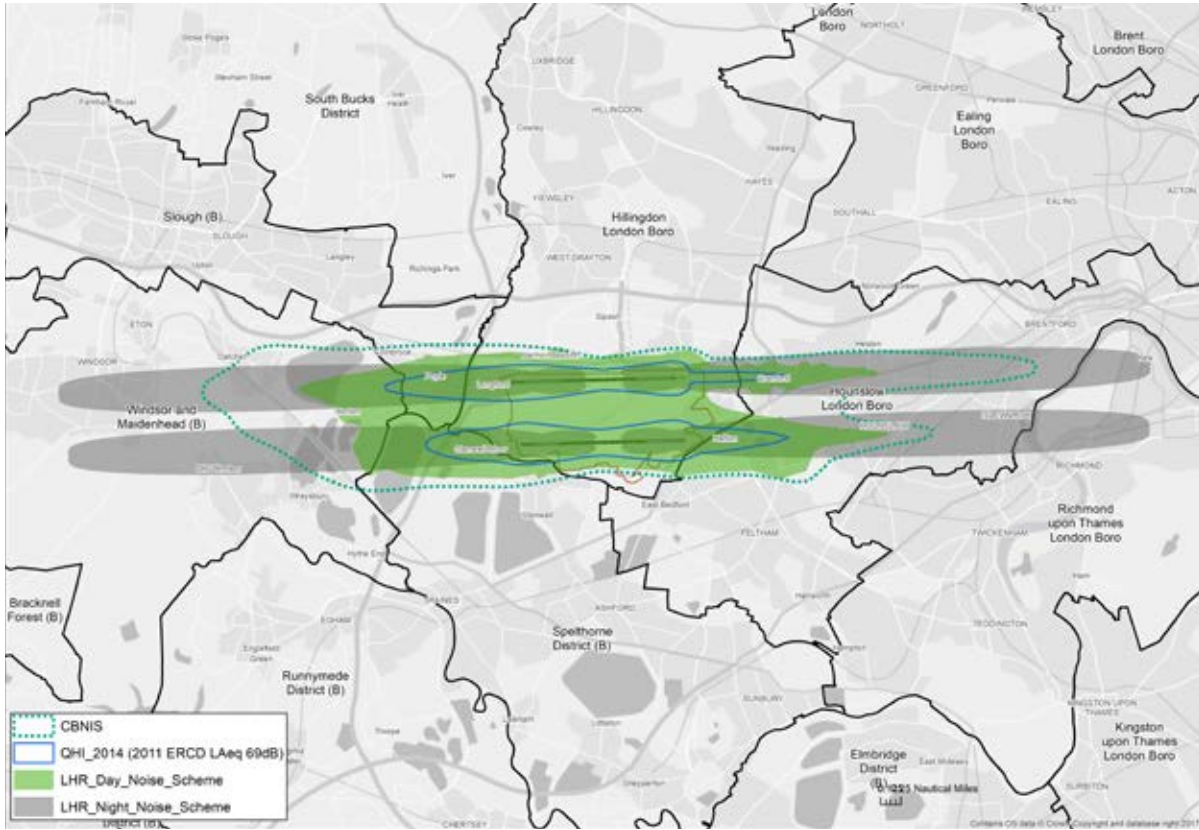
Holding Point	Holding Procedures
CHT NDB	Holding axis 293° M inbound, turning left, Maximum holding speed 220 kt, Holding level 3000 ft ALT
EPM NDB	Holding axis 274° M inbound, turning left, Maximum holding speed 220 kt, Holding level 3000 ft ALT

- (c) From the holding patterns, aircraft will normally be directed by the Radar Controller, as detailed in paragraph 3 below, to a position from which a straight-in final approach can be made. When traffic conditions permit, suitably equipped and approved aircraft will be permitted to carry out P-RNAV approach procedures as detailed in paragraph 4 below. Exceptionally, when circumstances necessitate, pilots may be instructed to carry out the Approach procedures without Radar Control as detailed in paragraph 5 below. Pilots are reminded of the Continuous Descent Approach noise abatement requirements detailed in AD 2.21.

3 Approach Procedures with Radar Control

- (a) When arriving traffic is being sequenced under radar direction, that part of the approach between the holding fix and the Final Approach track will be flown under direction from the Radar Controller. Once the aircraft is under the jurisdiction of 'Heathrow Director' changes of heading or Flight Level/altitude will be made only on instructions from the Radar Controller except in the case of Radio Communications Failure in the aircraft or at the ATS Unit
- (b) The procedures are designed to maximise runway capacity and to minimise noise disturbance in the areas overflown during the approach. Aircraft commanders are requested to conform to low power, low drag operating techniques to the maximum extent practicable.

9 NOISE MITIGATION SCHEME BOUNDARY MAP





10 COMMENTS FROM INDEPENDENT AUDITOR



Heathrow Airport Noise Action Plan 2019-2023

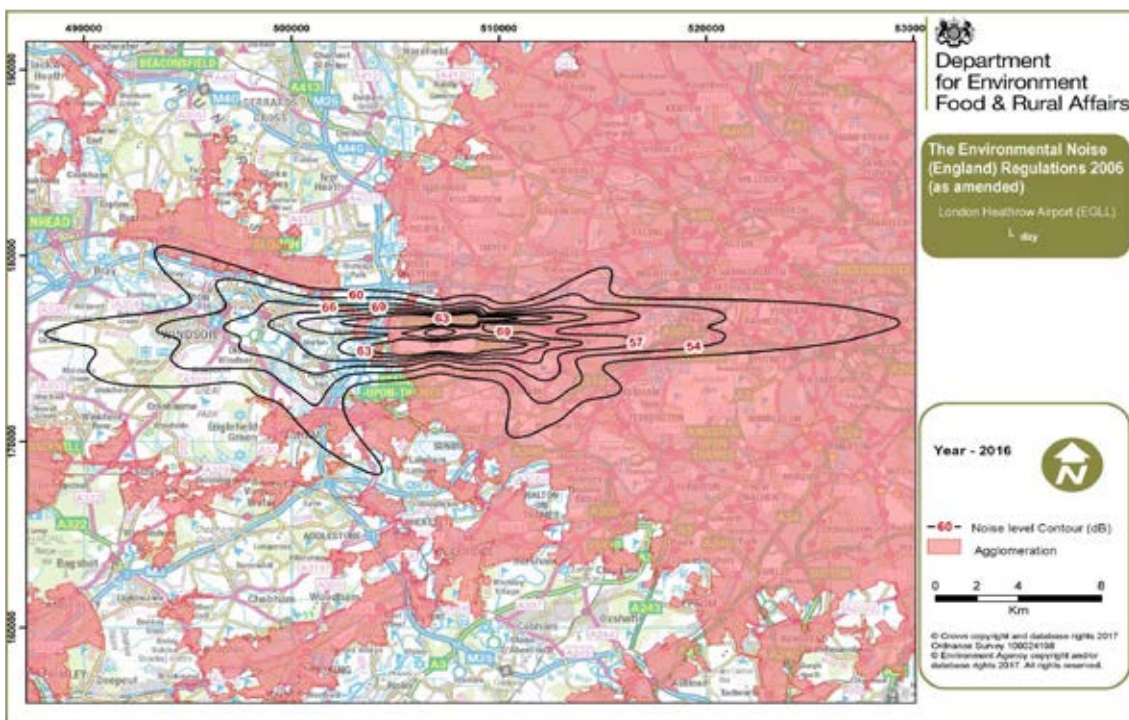
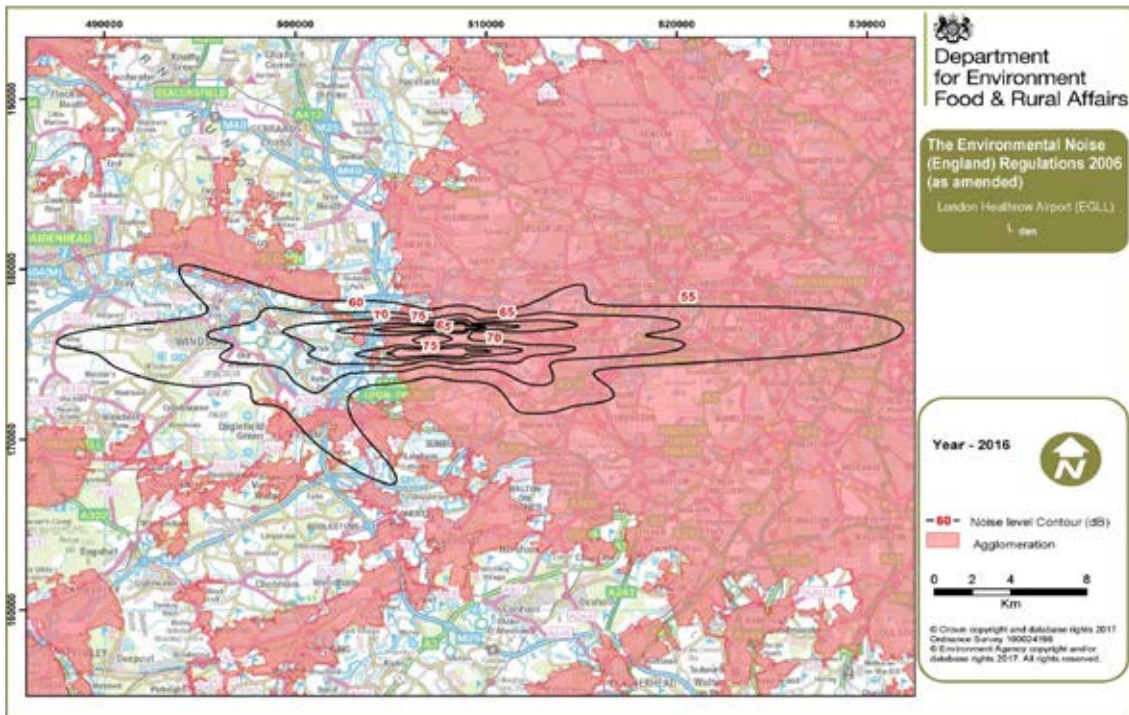
Auditor's Statement

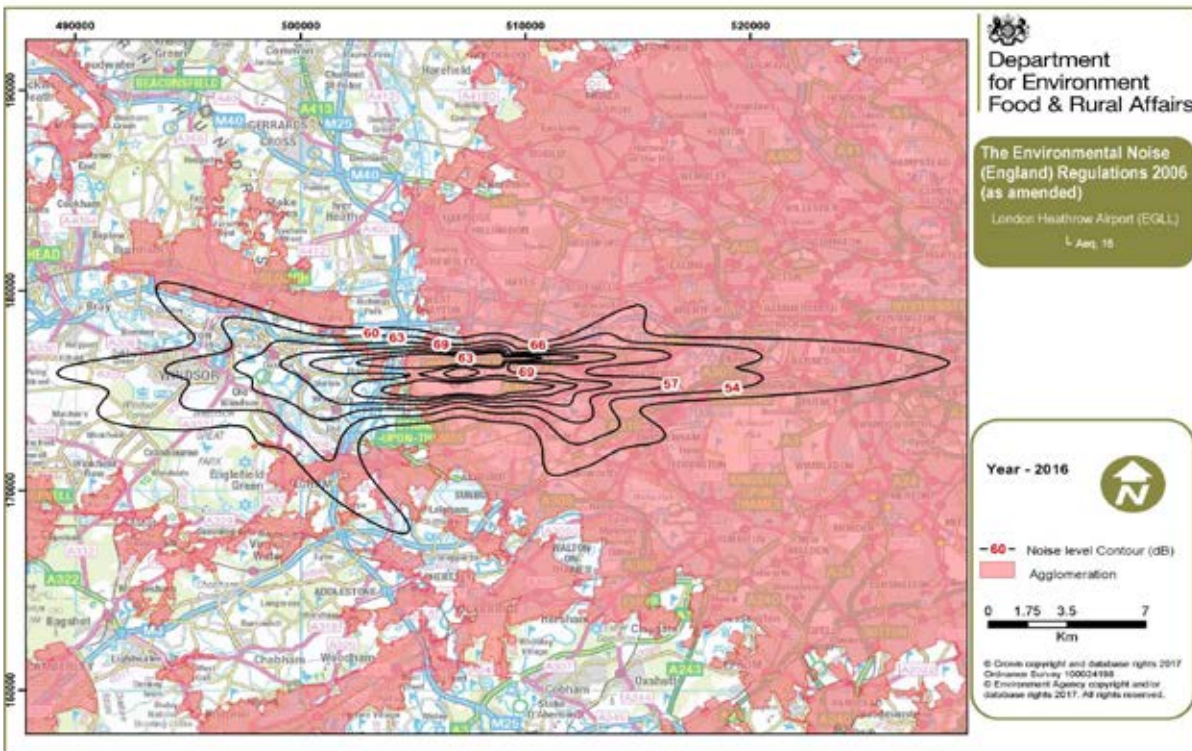
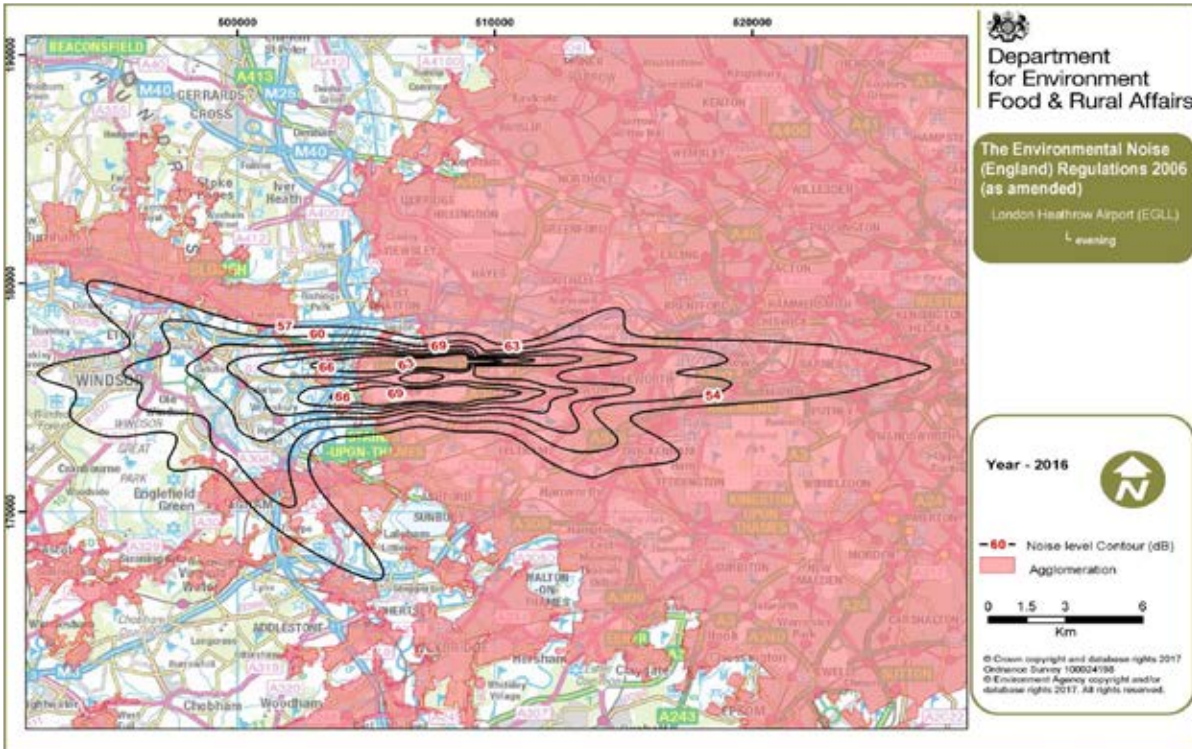
1. Stephen Turner Acoustics Limited (STA) was appointed by Heathrow Airport Limited (HAL) in June 2018 to undertake an independent audit of the progress claimed by HAL to have been made against the actions from the Noise Action Plan (NAP) (2013-2018). Those outcomes are set out in Annex 13 of this NAP.
2. STA had previously carried out annual independent audits of the then progress being claimed by HAL for each of the years, 2015, 2016 and 2017. The results of these audits were presented in reports as follows:
 - 2015 Audit – report reference st/15/19, dated November 2015;
 - 2016 Audit – report reference st/16/63, dated March 2017; and
 - 2017 Audit – report reference st/17/29, dated March 2018
3. The agreed protocol for each annual audit involved the members of the Heathrow Strategic Noise Advisory Group (HSNAG) suggesting ten specific actions to be audited each year. The independent auditor then selected a further five actions so that a total of 15 actions were audited in any one year. The results of each annual audit were presented each year to the HSNAG
4. For the 2018 audit, it was possible to confirm many of the outcomes by reference to the work undertaken for the previous annual audits. However, the auditor did seek and obtain from HAL evidence to support various points of detail shown in Annex 13.
5. Examples of such evidence included:
 - Internal documents confirming the data stated;
 - Evidence of commissioning studies from third parties; and
 - Copies of documents mentioned.
6. Following completion of this audit, a column was added to the table in Annex 13 setting out the auditor's comments. It can be seen that the auditor agreed with the claimed progress of all the actions. An additional observation was made for one of the actions. In addition, some minor drafting suggestions were made by the auditor to the text in the Progress column.

11 STRATEGIC NOISE MAPS

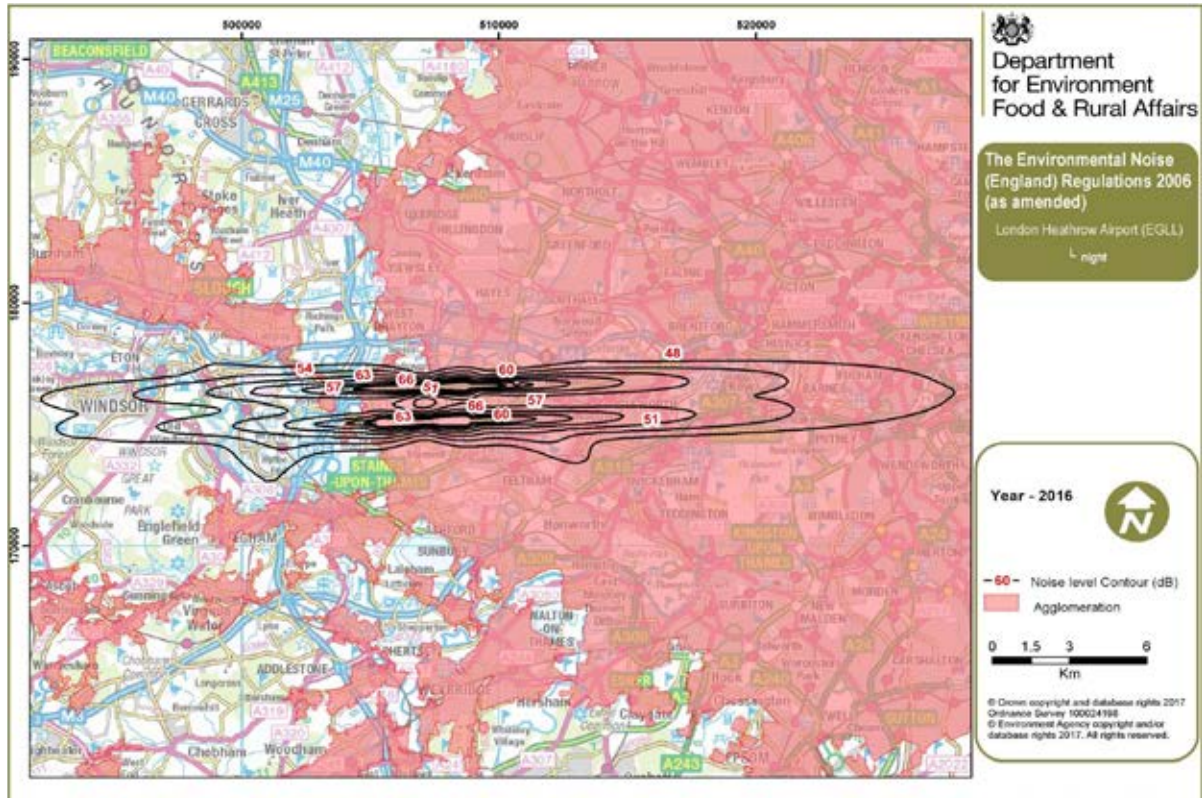
The 2016 Strategic Noise Maps for Heathrow were included in the DEFRA Airport Noise Action Plan Data Pack 2017 London Heathrow Airport (EGLL) July 2017 and are reproduced below. These contours include 2016 L_{den} , L_{day} , $L_{evening}$, L_{night} and $LA_{eq}16hr$. The contours were also published in

Heathrow Airport 2016 Summer Noise Contours and Noise Action Plan Contours (ERCD Report 1701) which is available on the Heathrow website at https://www.heathrow.com/file_source/HeathrowNoise/Static/Heathrow_Noise_Action_Plan_Contours_2016_and_Summer_Contours_2016.pdf





11 STRATEGIC NOISE MAPS



12 NOISE MAPPING AND IMPACTS 2006-2016

Detailed below in Tables 12.1 to 12.5b are the results of the 2016 aircraft noise mapping, showing the estimated number of people and dwellings exposed above various noise levels from aircraft using Heathrow airport. Where available, for comparison road and rail noise impacts in the London Agglomeration are included. This data has been sourced directly from DEFRA (Airport Noise Action Plan Data Pack 2017). It should be noted that the figures quoted for Heathrow include areas outside of the London Agglomeration, whereas the figures for road and rail includes only those within it.

As a reference we have also provided the equivalent figures for 2006 and 2011 where they are available.

In all of the tables below the number of dwellings has been rounded to the nearest 50, except when the number of dwellings is greater than zero but less than 50, in which case the total has been shown as '<50'. The associated population has been rounded to the nearest 100, except when the associated population is greater than zero but less than 100, in which case the total has been shown as '<100'.

The results of the Strategic Noise Mapping are provided in Annex 11 and the shape of the contours are illustrative of the location of Heathrow airport in relation to the city of London. The alignment of the two runways means that residents of Windsor and others to the west of the airport as well as Hatton and Feltham to the east are impacted by the airport's operation. Heathrow has witnessed strong growth over recent decades, currently handling 75 million passengers and 474,858 flights a year (2016) compared to around 56 million passengers and 440,000 flights in the year 1996.

The prevalence of westerly winds means that approximately 70% of aircraft arrivals come from

the east, over London, and around 70% of departures are to the west.

There are six departure routes for each runway for both easterly and westerly operations, and the L_{den} maps indicate the impact of these so-called Noise Preferential Routes (NPR) particularly to the west where the departure routes form spurs in the contours over parts of Slough, Windsor and Egham. (See Annex 3.)

For aircraft arriving at Heathrow the contour is significantly influenced by arrivals from the east where a long single spur of the 55dB L_{den} contour extends over Barnes and Fulham to the east.

The impact of departures is less marked on the L_{night} contour map reflecting that the night period typically consists of scheduled arrivals.

Tables 12.1 to 12.5 show that for L_{den} , L_{day} , $L_{evening}$, $L_{eq,16h}$ and L_{night} the number of dwellings and people in each band (with very few exceptions) has decreased between 2006 and 2011 and between 2011 and 2016.

The L_{den} results (Table 12.1) 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 these noise-impacted areas.

The figure of 683,700 people can also be compared with the over 2.6 million exposed to similar levels of road noise and around 591,000 exposed to rail noise sources in the London Agglomeration in 2016 (both of which are increases on 2011).

	2016	2011	2006	2016	2011	2006	2016	2011	2006	2016 ROAD	2011 ROAD	2016 RAIL	2011 RAIL
NOISE LEVEL (dB)	AREA (km ²)			NUMBER OF DWELLINGS			NUMBER OF PEOPLE			NUMBER OF PEOPLE		NUMBER OF PEOPLE	
≥ 55	198.0	221.9	244.7	288,050	329,900	314,350	683,700	766,100	725,500	2,647,100	2,387,200	591,200	525,200
≥ 60	74.5	79.6	92.7	72,050	73,650	81,000	193,700	191,500	191,400	1,590,400	1,426,100	346,600	308,500
≥ 65	28.9	32.0	37.1	15,050	18,250	22,000	45,600	52,700	56,400	1,144,300	1,027,200	176,400	158,100
≥ 70	9.5	10.7	13.7	1,450	2,250	3,500	4,500	6,600	9,700	662,800	597,800	68,700	59,800
≥ 75	3.4	4.0	5.0	<50	<50	250	<100	100	600	97,800	99,200	18,800	15,200

Table 12.1: Estimated total number of people and dwellings above various noise levels L_{den}

12 NOISE MAPPING AND IMPACTS 2006-2016

For the L_{night} contours the pattern is very similar, except that there are no contour bandings where the numbers exposed to air noise exceed road or rail exposure numbers. The 2016 data pack provided by DEFRA had different bandings to those provided for 2006, hence we have presented both these (Table 12.5a) and used the data provided by our annual Noise Action Plan contours report produced by the CAA (Table 12.5b) to identify trends in night time exposure. The results show that around eight times as many people are exposed to levels in excess of 50dB from road noise than for

aircraft noise and similarly around twice as many are exposed to this level of rail noise.

Figures 12.1-12.3 have also been included to illustrate the long-term trends in both the L_{den} and L_{night} contours since 2006. They show a clear downward trend and are based on the annual contour results we have commissioned from ERCD, CAA.

	2016	2011	2006	2016	2011	2006
NOISE LEVEL (dB)	NUMBER OF DWELLINGS			NUMBER OF PEOPLE		
≥ 54	227,950	256,500	262,300	554,900	611,600	605,700
≥ 57	97,450	97,350	107,600	258,300	249,800	253,700
≥ 60	41,350	41,750	43,300	118,600	115,500	114,000
≥ 63	14,450	17,300	21,400	43,100	49,400	54,100
≥ 66	3,900	4,800	6,450	11,500	13,900	17,300
≥ 69	850	1,100	1,800	2,500	3,000	4,500

Table 12.2: Estimated total number of people and dwellings above various noise levels L_{day}

There is a difference between the population and household results calculated by the ERCD and those presented in Tables 12.1-12.5b which were provided by DEFRA in the data pack. The results for the number of people affected given in the ERCD report were derived by consultants for the CAA using a different population dataset from that which was used by DEFRA. The same noise mapping contour results were used as the basis for both assessments.

There is also a difference between the DEFRA population datasets used for the 2006 mapping and the 2016 mapping. The latest (2016) census data has been used for the most recent mapping and this reflects a general increase in population and dwellings that has occurred across London, including areas within the noise contours.

To help illustrate this point we commissioned ERCD to produce population and dwelling data for the 2012 Noise Action Plan contours based on the 2006 and 2012 population datasets. The results are presented in Tables 12.6 to 12.8 and consistently show that the reductions in exposed population and dwellings would have been significantly greater if there had not been population growth and residential encroachment within the noise contours.

These results together with data from our complaint database, benchmarking studies, performance against our pre-existing noise mitigation measures, feedback from our public consultations and polling, auditing of our previous Noise Action Plan and our 2018 public consultation were considered in compiling this Noise Action Plan.

	2016	2011	2006	2016	2011	2006
NOISE LEVEL (dB)	NUMBER OF DWELLINGS			NUMBER OF PEOPLE		
	≥ 54	176,950	236,750	249,650	444,400	577,500
≥ 57	76,650	92,600	105,700	208,200	243,500	251,000
≥ 60	31,550	36,050	43,500	91,600	100,400	108,800
≥ 63	9,100	14,050	19,200	27,000	40,000	48,600
≥ 66	2,250	3,500	5,500	6,200	9,400	14,400
≥ 69	500	800	1,550	1,300	1,900	3,700

Table 12.3: Estimated total number of people and dwellings above various noise levels L_{evening}

	2016	2011	2006	2016	2011	2006
NOISE LEVEL (dB)	NUMBER OF DWELLINGS			NUMBER OF PEOPLE		
	≥ 54	176,950	255,100	258,400	444,400	610,700
≥ 57	76,650	95,900	109,700	208,200	247,100	258,500
≥ 60	31,550	39,650	45,150	91,600	110,400	111,800
≥ 63	9,100	16,650	20,850	27,000	47,500	52,800
≥ 66	2,250	4,550	6,200	6,200	13,000	16,600
≥ 69	500	1,050	1,750	1,300	2,700	4,300

Table 12.4: Estimated total number of people and dwellings above various noise levels $L_{\text{eq}, 16\text{hr}}$

	2016	2011	2016	2011
NOISE LEVEL (dB)	NUMBER OF DWELLINGS		NUMBER OF PEOPLE	
	≥ 48	150,900	197,950	366,500
≥ 51	68,300	66,950	182,200	172,700
≥ 54	28,100	28,850	83,100	82,500
≥ 57	12,250	13,750	38,000	41,000
≥ 60	3,350	4,850	10,900	15,200
≥ 63	550	1,050	2,000	3,400
≥ 66	<50	250	100	800

Table 12.5a: Estimated total number of people and dwellings above various noise levels L_{night}

12 NOISE MAPPING AND IMPACTS 2006-2016

	2016	2011	2006	2016	2011	2006	2016	2011	2006	2016 ROAD	2011 ROAD	2016 RAIL	2011 RAIL
NOISE LEVEL (dB)	AREA (km ²)			NUMBER OF DWELLINGS			NUMBER OF PEOPLE			NUMBER OF PEOPLE		NUMBER OF PEOPLE	
≥ 50	74.0	74.6	84.4	86,300	83,200	88,900	221,200	199,300	207,200	1,866,800	1,665,400	436,200	388,700
≥ 55	26.5	26.8	34.2	21,600	22,500	24,100	62,400	58,700	62,000	1,232,900	1,106,500	240,900	214,200
≥ 60	8.6	9.2	11.9	3,400	4,700	6,000	10,900	13,100	16,300	724,300	649,400	107,100	95,100
≥ 65	3.0	3.3	4.5	300	600	600	1,100	1,700	1,700	117,100	114,500	35,100	29,700
≥ 70	1.4	1.5	1.8	0	0	0	0	0	0	1,400	900	7,200	6,400

Table 12.5b: Estimated total number of people* and dwellings above various noise levels L_{night}
 *based on population data provided by ERCD,CAA in Heathrow 2011 Noise Action Plan Contours Report (1304)w

	2016	POP2016		POP2006	
NOISE LEVEL (dB)	AREA (km ²)	POPULATION (x1000)	HOUSEHOLDS (x1000)	POPULATION (x1000)	HOUSEHOLDS (x1000)
≥ 55	198.0	689.4	286.1	599.8	268.0
≥ 60	74.5	195.6	74.5	154.3	64.6
≥ 65	28.9	44.5	15.4	44.5	13.3
≥ 70	9.5	4.8	1.7	4.8	1.7
≥ 75	3.4	<0.1	<0.1	<0.1	<0.1

Table 12.6: Heathrow 2012 L_{den} Noise Action Plan contours with 2006 population database

	2016	POP2016		POP2006	
NOISE LEVEL (dB)	AREA (km ²)	POPULATION (x1000)	HOUSEHOLDS (x1000)	POPULATION (x1000)	HOUSEHOLDS (x1000)
≥ 50	74.0	221.2	86.3	180.6	76.9
≥ 55	26.5	62.4	21.6	47.5	18.5
≥ 60	8.6	10.9	3.4	9.0	3.1
≥ 65	3.0	1.1	0.3	1.1	0.3
≥ 70	1.4	0	0	0	0

Table 12.7: Heathrow 2012 L_{night} Noise Action Plan contours with 2006 population database

	2016	POP2016		POP2006	
NOISE LEVEL (dB)	AREA (km ²)	POPULATION (x1000)	HOUSEHOLDS (x1000)	POPULATION (x1000)	HOUSEHOLDS (x1000)
≥ 48	33.9	95.6	34.2	72.6	28.8

Table 12.8: Heathrow 2012 48dB L_{eq} 6.5h Noise Action Plan contours with 2006 population database

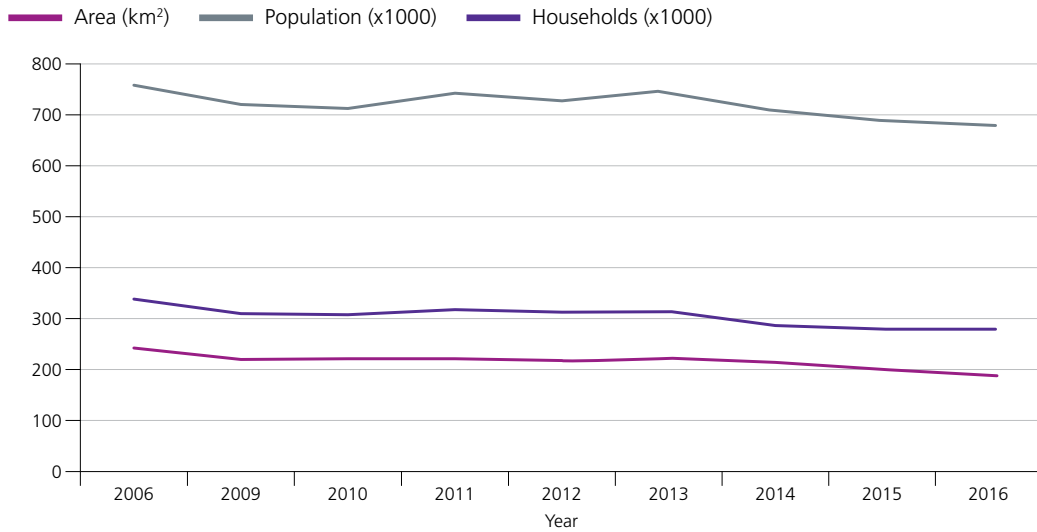


Figure 12.1: Area, population & dwellings within the 55dB L_{den}

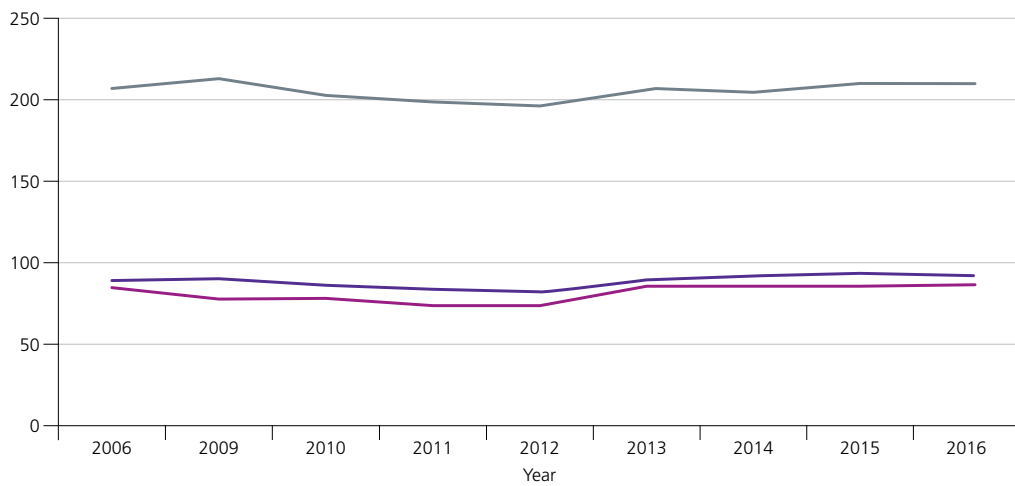


Figure 12.2: Area, population & dwelling within the 50dB L_{night}

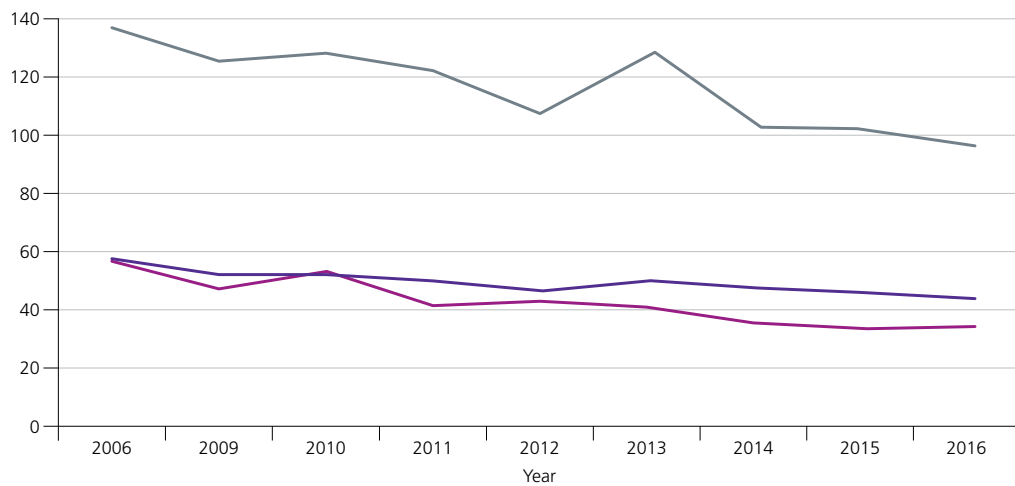


Figure 12.3: Area, population & dwelling within the 48dB L_{night} (6.5hr)

13 ACTIONS IN NOISE ACTION PLAN 2013-2018 PROGRESS AND OUTCOMES

REF:	ACTION FROM NOISE ACTION PLAN 2013-2018	COMMENTS: PROGRESS MADE IN THE PERIOD 2013-2018	AUDITOR'S COMMENT	COMMENT OR ACTION IN NAP 2019-23
1.01	We will continue to engage with our airline partners to achieve the voluntary phase out of aircraft with a cumulative margin of less than 10 EPNLdB below Chapter 3 limits at Heathrow in order to help accelerate the introduction of quieter aircraft.	Chapter 3 aircraft movements reduced from 11% in 2010 and 1.40% in 2013 to 0.4% in 2017	Agree	Updated. See Action 1.1
1.02	We will review the noise related differential in our landing charges annually in order to encourage the use of the quietest aircraft practicable at Heathrow. The charges will be published annually in our Conditions of Use.	In 2013, noise charges were £1164 for Ch3High aircraft and £660 for the Ch4 aircraft. By 2018, £8,832 for Ch3 aircraft and £757 for the best Ch14Low aircraft.	Agree	Retained. See Action 1.3
1.03	In order to encourage the use of the quietest aircraft practicable we will review the structure of our landing charges as part of a wider charges review by the end of 2015.	In 2017 we introduced new categories for the quietest aircraft Ch14H, 14B and 14L (i.e. High, Base, Low)	Agree	Updated. See Action 1.2
1.04	With the aim of minimizing and where possible reducing the 50dB L _{night} 8 hour contour we will introduce a target for the total quota count points (QC) for the 2300-0700 period and publish performance against this target. This is a voluntary target and is intended to demonstrate the improving noise performance of aircraft operating at night. It is not part of the DfT's Night Flying Restrictions regime.	In 2016 the QC 8hr was 26072 and in 2017 it was 24767. Prior to 2016 the aircraft QC was not recorded outside the core QC night quota period.	Agree	Covered by the Quiet Night Charter. See Action 4.2
1.05	For all new aircraft types that enter a scheduled operation at LHR we will undertake comparative noise studies relative to older equivalent aircraft types with ERCD in order to show the improvements in new aircraft types.	In 2014, we published a study on the B787. New aircraft include the A350, the CS100, CS300, B747800, B737max and Dash8. As of 2018, these have had insufficient representative flights to enable meaningful studies.	Agree	Retained. See Action 1.5
1.06	We will establish an independent audit process to ensure our systems for recording noise certification data are robust by 2016.	Following a delay due to a contractual issue, this work was commissioned in January 2018.	Agree	Retained. See Action 1.6
2.01	In order to provide regular feedback, support collaborative working, recognise good performance and help communicate how the airlines and Heathrow are working together to reduce the impact of noise we will develop and implement a FlyQuiet Scheme by the end of 2013.	Fly Quiet was launched in 2013. It was updated in 2017, and now including NO _x emissions, it is called Fly Quiet and Green (FQG). The scheme has promoted some notable improvements from individual airlines, their performances and fleets. Between 2013 and Q2 2018 the following FQG metrics showed improvements: <ul style="list-style-type: none"> • QC/seat improved by 20% • Chapter number improved by 26% • CDA violations decreased by 29% • Track keeping (TK) violations decreased by 53% 	Agree	Updated. See Actions 2.2 and 2.3

REF:	ACTION FROM NOISE ACTION PLAN 2013-2018	COMMENTS: PROGRESS MADE IN THE PERIOD 2013-2018	AUDITOR'S COMMENT	COMMENT OR ACTION IN NAP 2019-23
2.02	Undertake a review to evaluate the effectiveness of the FlyQuiet Scheme and make recommendations for its improvement and for the setting of future targets.	Some examples of airlines and their areas of improvement due to FQG include EI Al (CDA), Oman (TRK, CDA), Kuwait (CDA), Flybe (CDA and TRK), Saudi, Turkish and Lot (737 and late runners).	Agree	Updated. See Actions 2.2 and 2.3
2.03	Building on the principles of the FlyQuiet Programme and in support of the noise related requirements of 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 establish a process for monitoring performance against these standards.	As of 2018 the Minimum Performance Standard was developed and ready for implementation in 2019.	Agree	Retained. See Action 2.1
2.04	With the aim of seeking to reduce the number of departure noise infringements and compensate local communities we will review and consult airlines on a new fining regime for breaches of the DfT departure noise limits and implement the revisions by the end of 2014.	In 2006 there were 216 infringements and in 2010, 127. From 2013 through 2017 were 43, 35, 36, 36 and 22 infringements, respectively. The 2017 figure of 22 is the lowest on record. See Annex 5.	Agree	Updated. See Action 5.7
2.05	We will analyse the number of late running aircraft operating after 23:30 local (excluding periods of significant disruption). We will review the reasons, and will seek to reduce the number.	Late running departures (after 23:30) 2012 – Approx 500 2016 – 330 2017 – 235 Note: Late departures data recording procedures changed after 2012	Agree. Note that the focus was on late running departures.	Covered by the Quiet Night Charter. See Action 4.2
2.06	With the aim of developing a more outcome based approach we will continue to work with the Department of Transport's Aircraft Noise Monitoring Advisory Committee to review aircraft noise abatement techniques and procedures in line with ICAO's balanced approach and national sustainability objectives.	ANMAC is overseeing the departure noise study. Meetings are only held as needed. Last Technical Working Group meeting was 12 March 2018.	Agree	Updated. See Action 5.3
2.07	Working with local communities and the Heathrow Noise Forum, and subject to the governance of the Noise Steering Group (NSG), we will identify opportunities to develop quieter procedures and agree a programme of trials and activities in line with the Airspace Modernisation Programme. These will be reviewed annually and new actions added as appropriate.	Recent Quieter Procedures studies have included: - Slightly Steeper Approaches - Gear deployment - Climb gradient trial	Agree	Expanded. See Actions 2.4 through 2.14
2.08	Subject to planning permission being approved and after completion of works, we will implement easterly alternation. We will publicise key dates and changes.	Consent for infrastructure for Departures on 27L is now contained in the third runway Development Consent Order (DCO) and is not expected before 2021.	Agree	No new action

13 ACTIONS IN NOISE ACTION PLAN 2013-2018 PROGRESS AND OUTCOMES

REF:	ACTION FROM NOISE ACTION PLAN 2013-2018	COMMENTS: PROGRESS MADE IN THE PERIOD 2013-2018	AUDITOR'S COMMENT	COMMENT OR ACTION IN NAP 2019-23
2.09	We will establish a Respite Working Group to create a report assessing the options for providing noise respite including operational feasibility and noise benefits.	See Action 5.12 below	Agree	Completed
2.10	In order to manage ground noise, we will continue to apply our operating practices including those in the relevant OSIs. Where any problems are identified we will set out a programme to address issues.	The OSI was updated in 2017 to improve the Engine Ground Run (EGR) request, approval and recording processes.	Agree	Updated. See Action 2.17
3.01	Based on the outcome of the Quieter Home Initiative pilot and in line with government guidance, we will establish a scheme to mitigate noise for residents most affected by aircraft noise. We will continue to offer our existing day, night and home relocation schemes.	As at Q2 2018 we have completed homes in the following schemes: QHI 542, Day 4603 and Night 4697.	Agree	Updated. See Actions 3.1 – 3.3
3.02	We will complete all glazing work and begin the ventilation process for those buildings eligible within our Community Building Noise Insulation Scheme (CBNIS) and available for works.	As at Q2 2018, glazing was installed at 43 buildings and ventilation completed at seven schools.	Agree	Updated. See Action 3.4
3.03	We will develop an Adobe building programme to be included within our CBNIS scheme to be offered to infant/primary schools.	In 2017, we completed the Adobe installation at the last of 16 schools of the 21 invited.	Agree	Completed Programme completed
3.04	Subject to planning permission for the runway works to enable the implementation of easterly alternation and in line with government guidance, we will implement a noise insulation scheme for those residents most affected.	Programme on hold until the implementation of Easterly Alternation.	Agree	See Action 2.8 above
3.05	As part of our current insulation schemes we will undertake an annual survey of recipients to measure their overall satisfaction with scheme.	In 2016, 71% of survey respondents agreed their quality of life had been impacted positively by the scheme. In 2017 it was 66%.	Agree	Updated. See Action 3.5
3.06	Subject to the definition of Quiet Areas by the government, we will work with local authorities, government and local community groups to develop a plan to protect these areas in line with the Aviation Policy Framework (APF), Noise Policy Statement for England (NPSE) and National Planning Policy Framework (NPPF).	In its Airport Noise Action Plan Guidance for Airport Operators (July 2017), DEFRA confirmed that no Quiet Areas had been designated in the Heathrow area.	Agree	No further action for now
3.07	We will seek to work with local authorities to agree local planning guidance which adheres to the guidance in the Noise Policy Statement for England (NPSE) and National Planning Policy Framework (NPPF).	Three councils developed a draft document that was subject to consultation, the final version has yet to be published.	Agree	Updated. See Action 3.6

REF:	ACTION FROM NOISE ACTION PLAN 2013-2018	COMMENTS: PROGRESS MADE IN THE PERIOD 2013-2018	AUDITOR'S COMMENT	COMMENT OR ACTION IN NAP 2019-23
3.08	We will seek to work with local authorities to monitor new residential and community building developments on an annual basis. We will track this together with the annual population statistics published with our noise contours.	Populations have grown in some noise impacted areas.	Agree	Updated. See Actions 3.7 and 3.8
4.01	We will continue to implement our night restriction regime in line with government policy.	Heathrow has complied with all relevant night restrictions during the period.	Agree	Retained. See Action 4.1
4.02	We will continue to restrict engine runs at night in accordance with our published Operational Safety Instruction (OSI's).	The OSI was updated in 2017 to improve the Engine Ground Run (EGR) request, approval and recording processes.	Agree	Updated. See Action 2.17
4.03	We will continue to monitor our voluntary arrangement for arrivals scheduled between 04:30-06:00 (local) not to arrive prior to 04:30.	There were two in the year 2015 and none since.	Agree	Covered by the Quiet Night Charter. See Action 4.2
4.04	We will continue to monitor our voluntary ban on the scheduling of cargo operations between 23:30 and 06:00 (local).	There was zero non-compliance in the period 2013-2017.	Agree	See Action 4.2 on the QNC
4.05	We will continue to adhere to the agreed annual ATM cap as set by DfT.	ATM did not exceed 480,000 during the period.	Agree	Action 4.4
5.01	We will continue to engage with local community representatives to understand their concerns about noise and provide them with an opportunity to influence more directly decisions we make on noise management and explore potential solutions to the noise issue. We will do this by setting up the Heathrow Strategic Noise Advisory Group (HSNAG) (formerly the Heathrow Noise Forum) to be a focal point for stakeholder involvement in the management of aircraft noise.	HSNAG was established in 2014 and continues to meet every 2-3 months.	Agree	Continue HSNAG without a specific action. Also see Actions 3.8 and 5.17
5.02	We will improve our communications to residents by 1) relaunching the Heathrow Noise website in 2014, making better use of graphics and animation; providing timely and relevant information including daily operational web updates; regularly issuing noise reports including the FPU reports, annual contours, trial and community noise reports; computer animations to explain operations at Heathrow and 2) launching a social media service by Dec 2013 to keep people updated on unscheduled changes to operations which impact on noise.	Website and Communications milestones (2013 – 2018) Launch of the Heathrow Noise Twitter account in 2013; Redesign of the Noise website 2014; development and launch of new flight analysis tool 'xPlane' in 2016; introduction of new noise Community Information monitoring reports in 2017. Ongoing introduction of new features to Webtrak such as noise monitors, NPRs, rainfall layer.	Agree	Updated. See Actions 5.1 and 5.2

13 ACTIONS IN NOISE ACTION PLAN 2013-2018 PROGRESS AND OUTCOMES

REF:	ACTION FROM NOISE ACTION PLAN 2013-2018	COMMENTS: PROGRESS MADE IN THE PERIOD 2013-2018	AUDITOR'S COMMENT	COMMENT OR ACTION IN NAP 2019-23																		
5.03	We will positively respond to requests to attend public meetings regarding aircraft noise, airspace modernisation and expansion plans. We will establish the Community Noise Forum (CNF) and agree a work plan.	HCNF was established in 2015	Agree	Updated. See Action 5.3																		
5.04	We will continue to log all enquiries and complaints relating to aircraft operations, publish statistics and analyse these to help to understand and inform our noise priorities. We will seek regular feedback on the complaints service we offer from key stakeholders and members of the Heathrow Noise Forum to consider how complaint handling could be continually improved.	See Annex 4	Agree	Updated. See Action 5.8																		
5.05	We will continue to carry out annual polling of residents living in the 12 boroughs and within the 55dB L _{den} surrounding Heathrow to establish what % of residents believe Heathrow is working to keep the impact of noise to a minimum.	Polling was conducted in 2014 and 2018	Agree	Retained. See Action 5.9																		
5.06	We will continue to provide public access to flight information via WebTrak. We will be the first airport in Europe to introduce a new system called WebTrak My Neighbourhood to give residents a fuller picture of aviation noise in their local community. We will commit to carry out and fund two upgrades of the system between 2013-2018 as they become available to enhance the functionality.	Recent initiatives include xPlane, noise data and NPR tracks on WebTrak, and expanded monitoring.	Agree	Updated. See Action 5.1																		
5.07	Build upon Heathrow's noise communications and develop a targeted benchmarking process with local shareholders. Run a workshop session and use outputs to improve our communications tools and activities.	A noise metrics workshop was held with stakeholders in 2015 and ongoing work through the HCNF to improve noise monitoring reports.	Agree	Updated. See Action 5.1																		
5.08	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.	<table border="1"> <thead> <tr> <th>Fine data</th> <th>Infringements</th> <th>Fines</th> </tr> </thead> <tbody> <tr> <td>2013</td> <td>43</td> <td>£22,500</td> </tr> <tr> <td>2014</td> <td>35</td> <td>£33,500</td> </tr> <tr> <td>2015</td> <td>36</td> <td>£104,500</td> </tr> <tr> <td>2016</td> <td>36</td> <td>£170,500</td> </tr> <tr> <td>2017</td> <td>22</td> <td>£72,000</td> </tr> </tbody> </table>	Fine data	Infringements	Fines	2013	43	£22,500	2014	35	£33,500	2015	36	£104,500	2016	36	£170,500	2017	22	£72,000	Agree	Retained. See Action 5.6
Fine data	Infringements	Fines																				
2013	43	£22,500																				
2014	35	£33,500																				
2015	36	£104,500																				
2016	36	£170,500																				
2017	22	£72,000																				
5.09	We will continue to publish our quarterly FPU Report on performance trends and explanatory comments regarding aircraft noise management at Heathrow.	All flight performance quarterly and annual reports published. Note: Late departures data recording procedures changed after 2012 team.	Agree	Updated. See Action 5.1																		
5.10	We will annually commission the production and reporting of the summer noise 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}).	These were published each year on the website www.heathrow.com/noise	Agree	Retained. See Action 5.10																		

REF:	ACTION FROM NOISE ACTION PLAN 2013-2018	COMMENTS: PROGRESS MADE IN THE PERIOD 2013-2018	AUDITOR'S COMMENT	COMMENT OR ACTION IN NAP 2019-23
5.11	We will have our operational noise management activities ranked against other airports worldwide and will identify improvements so that we are ranked one of the world leaders in operational noise management in 2014 and 2016.	Report was published in 2014 and advice was provided to conduct next report not before five years.	Agree	Updated. See Action 2.5
5.12	Based on the recommendations for the Respite Working Group outlined in 2.09, we will conduct any suggested research.	Respite Working Group Milestones: - Report on review and definitions (2017) - Report on perceived and valued differences (2018) - Developing draft report on Phase 2 (2018)	Agree	Updated. See Action 5.12
5.13	We will formally review the Noise Action Plan following publication of the strategic noise maps for 2016 and initiate a consultation on any proposed amendments in line with government guidance. On an annual basis we will undertake a review of progress against the actions and if appropriate consult with the Consultative Committee.	The 2016 Strategic Noise Maps were in the Airport Noise Action Planning Data Pack 2017. Discussions at HCNF on the development of this Noise Action Plan 2019-2023 started in May 2017. Independent audits were carried in 2015, 2016 and 2017.	Agree	Updated. See Action 5.15
5.14	We will monitor the performance indicators listed within the action plan and where we determine that further improvement can potentially be achieved we will seek to set an annual target to help address it.	See Annex 10	Agree	Updated. See Actions 5.16
5.15	Through the Heathrow Noise Forum and our development of the My Neighbourhood module, we will work with our stakeholders to further enhance the metrics we use to describe our noise impact throughout the five year action plan programme by the end of 2017.	Over the course of 2016 and 2017 the HCNF developed a noise reporting template for the NMT. First reports in this 60-page format were published in 2017. https://www.heathrow.com/noise/reports-and-statistics/reports/community-noise-reports	Agree	Updated. See Action 5.1



14 EXTRACTS FROM DEFRA GUIDANCE FOR AIRPORT OPERATORS JULY 2017

- 2.1 An Action Plan must be drawn up for places near the airport which are affected by noise from airport operations as shown by the results of the noise mapping⁷ and meet a number of requirements set out in the Regulations:
- a description of the airport and any other noise sources taken into account;
 - the authority responsible;
 - the legal context;
 - any limit values in place;
 - a summary of the results of the noise mapping, including an evaluation of the estimated number of people exposed to noise;
 - identification of problems and situations that need to be improved;
 - a record of the public consultations that have taken place;
 - any noise reduction measures already in force and any projects in preparation;
 - long term strategy;
 - actions which the airport operator intends to take in the next five years, including measures to preserve quiet areas;
 - financial information (if available): budgets, cost-effectiveness assessment, cost-benefit assessment;
 - provisions envisaged for evaluating the implementation and the results of the Action Plan; and
 - estimates in terms of the reduction of the number of people affected (annoyed, sleep-disturbed, or other).
- 2.2 Detailed guidance on how each of the above requirements may be met is provided in Annex C.

- 3.1 All of the airports listed in Annex A already have an Action Plan in place from previous rounds of END noise mapping. It is envisaged that these airports should follow the process set out below to update their Action Plan.
- 3.2 The current plan should be reviewed and revised to include, as necessary:
- updated details about the airport and its operation;
 - the results of the noise mapping completed in 2017;
 - the progress made against the actions described in the current Action Plan;
 - updated information about relevant legislation and standards;
 - updated relevant national and local policies;
 - information about on-going actions; and
 - information about any proposed new actions.
- 3.3 When revising their plans, airport operators should ensure that all the requirements set out in the regulations (listed in paragraph 2.1 above and described further in Annex C) are met.
- 3.4 It is envisaged that once the plan has been revised it will be presented to the Airport's Consultative Committee for comment, and any other appropriate bodies depending on the extent and nature of the revisions. The Airport Operator should summarise the comments received in the revised plan together with their response to the issues raised.

15 COLLABORATION AND CONSULTATION 2017 AND 2018

DEFRA guidance

The DEFRA Airport Noise Action Plan Guidance for Airport Operators (July 2017) requires:

- *“The public is consulted about proposals for actions plans.*
- *The public is given early and effective opportunities to participate in the preparation and review of actions plans.*
- *The results of the public participation are taken into account.*
- *The public is informed of the decisions taken and*
- *Reasonable time frames are provided allowing sufficient time for each stage of public participation.”*

To these ends, in 2017 Heathrow undertook to develop a draft Noise Action Plan in a collaborative manner and then, in 2018 with a process approved by DEFRA, we held a public consultation to collect feedback on the draft document. These processes and the resulting outcomes are described below.

Development of draft Noise Action Plan

Starting in June 2017, we held six workshops with the two 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.

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 a meeting local authority environmental health officers.

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

Public consultation on the draft Noise Action Plan

A six-week public consultation on the draft Noise Action Plan 2019-2023 was held from 16 May to 26 June 2018. The main elements of the consultation included:

- Documentation, background information and downloadable versions of the draft document and annexes available on the Heathrow consultation website www.heathrowconsultation.com

- Postcards sent to 16,000 homes and businesses inside the 2016 L_{den} 65dBA noise contour to publicise the consultation.
- Newspaper advertisements of the consultation in local papers in the 12 boroughs within or partly within the 2016 L_{den} 55dBA noise contour.
- Email to the local authorities and members of parliament within the consultation zone (L_{den} 55dBA) to provide information and offer briefing if required.
- A press release issued to local and regional media around Heathrow.
- Three consultation exhibitions at the Heathrow Academy for local residents and stakeholders to review our plans and give feedback.
- Presentations made by Heathrow upon request from local authorities and at meetings such as the Heathrow Community Noise Forum.
- The opportunity to send in any written views regarding the noise action plan. A summary of the issues raised in submissions responding to the consultation along with Heathrow’s responses have been included below.

Comments submitted on the Consultation

Number of responses and respondents

The consultation on the draft Noise Action Plan was run by a consultant, Wood, on behalf of Heathrow. Wood also analysed the comments that were submitted. In total, there were 57 responses to the consultation received from:

- members of the public (42);
- local authorities and parish councils (9); and
- representative groups such as residents’ associations and campaign groups from both local and airline communities (6).

All responses to the public consultation were analysed and every issue raised was identified. These were then grouped together where possible into a range of categories and entered into the table below. The table includes responses and records the modifications to the draft Noise Action Plan and its actions contained in this draft for submission to DEFRA for review.

Issues raised during the consultation and Heathrow's responses

THEME OR ISSUE IN RESPONSE TO CONSULTATION	HEATHROW RESPONSE	REF OR ACTION
Adequacy and content of the draft Noise Action Plan		
<p>Clarifications, tone, language, accessibility or missing content needs to be provided or improved.</p> <p>Number of people affected by noise should be referenced in the foreword.</p>	<p>At the time of going to public consultation some data was unavailable (including latest data updates, forecast contours, the KPIs, and new legal developments.) We have since have added these to our submission to the Government (DEFRA) for approval. Clarifications and use of accessible language have been added where possible or the issues and questions asked have been addressed below.</p>	
<p>Noise Action Plan has no clearly stated objectives or outcomes.</p>	<p>Section 2 of the Noise Action Plan states that its purpose is to comply with the requirements of the EU Environmental Noise Directive and associated Government regulations. It goes on to quote Government guidance 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".</p>	Section 2
<p>Reference to the consequences of Brexit to be included.</p>	<p>Brexit is discussed briefly in Section 2. At this stage it is not known how Brexit might affect the need for a Noise Action Plan under the European Noise Directive so further discussion would be speculation.</p>	
<p>Maps should be printed to the same scale and contour labelling reviewed.</p>	<p>Maps in these documents are for general information. The source documents such as the 2016 Noise Contour Report (see www.heathrow.com/noise) contain better quality images.</p>	
<p>Noise Action Plan should note that people are more sensitive to noise than they were in 2013.</p>	<p>Studies on annoyance are referred to in Section 4 but this Noise Action Plan does not contain a study on sensitivity and does not draw conclusions on changes in sensitivity of the population.</p>	
<p>Noise Action Plan's assertion that less people affected by noise is not true. [Consultee supplied a graphic to describe this]</p>	<p>The 2016 Strategic Noise maps show reductions in the objective measures of area, population and households within the contours.</p>	
<p>The Noise Action Plan should be reviewed by ICCAN or independently monitored. ICAN should review current sanctions system and compensation.</p>	<p>When it is established, ICCAN may choose to review or monitor this Noise Action Plan or part of it, if this is within its remit.</p>	Action 2.12
<p>What are the consequences of failing to meet Noise Action Plan commitments?</p>	<p>The Noise Action Plan is a requirement from Government who will hold us to account. We also provide an annual progress update on the Noise Action Plan and targets, which is published on our website. If the Government determines that progress against their noise policy objectives is not sufficient, they have the power to implement further measures.</p>	Action 5.16
<p>Explain who is responsible for which aspects of noise management. (Heathrow, DfT, CAA, NATS etc.)</p>	<p>The DfT's Air Navigation Guidance 2017 sets out the roles and responsibilities of all bodies that have a responsibility for aviation noise management. The 2017 guidance can be found on the DfT's website (and the section on roles and responsibilities starts at page 9).</p>	Section 4

15 COLLABORATION AND CONSULTATION 2017 AND 2018

THEME OR ISSUE IN RESPONSE TO CONSULTATION	HEATHROW RESPONSE	REF OR ACTION
Clarify the period covered by Noise Action Plan.	The Noise Action Plan covers the period from 1 January 2019 to 31 December 2023. Many actions are already being implemented and many will be completed before the end of 2023.	
Provide comparison of the 2016 57dB LA _{eq} , 16hr contour and the current 57dB LA _{eq} , 16hr envelope (limit: 145 km ²) required.	This is now provided in Annex 5.	Annex 5
The framework for noise management is dated and imprecise.	The Heathrow framework is based on ICAO's Balanced Approach, which is an internationally recognised approach to managing aircraft noise, and is considered the global standard. In addition, we have included a section on Working with Local Communities.	Section 5
The Noise Action Plan should use data from 2017 rather than 2016.	DEFRA requires that the Noise Action Plan is based on the Strategic Noise Map for 2016. The use of 2017 data would make no material difference to the Noise Action Plan 2019-2023 actions.	Section 2
Quieter planes		
Data needed on aircraft at Heathrow and their noise chapters. Information on the current and future aircraft types (and their chapters) that use Heathrow should be included in the Noise Action Plan.	We note that, while tracked in detail internally at Heathrow, this information is not readily available to the public. We will address this and regularly publish the information under Action 5.1. On future aircraft types, we can reasonably forecast that within the 5-year life of this plan, the fleet at Heathrow will remain dominated by existing aircraft types.	Action 5.1
Noisy aircraft types should be banned and newer types encouraged. A Chapter 4 phase-out should be implemented earlier than 2045. Heathrow should monitor and discourage the number of non-compliant A380's with Rolls Royce engines	Heathrow does not have the power to unilaterally ban specific aircraft types that are legally certified to operate, but we can use differentiated noise charges as a financial incentive for airlines to use the best aircraft. Bans or phase-outs of Chapter 3 and 4 aircraft can only be achieved through voluntary agreements with airlines. The 2045 target date sets a reference for discussion with stakeholders.	Action 1.1
Charges and fines		
Noise charges should be based on measured noise levels and information made publicly available. Noise Action Plan should differentiate between 2 and 4-engined aircraft	The Heathrow noise charge is based on the internationally recognised ICAO certificated noise levels provided by each aircraft operator. The noise certificate takes into account the number of engines on an aircraft. Charging based on measured noise levels is problematic because noise can vary greatly due to factors such as destination, fuel load, weather or flight track. Charge rates are published annually in our Conditions of Use and available on our website: www.heathrow.com/company/partners-and-suppliers/conditions-of-use	Actions 1.2 and 1.3
Information on the CAA recommendations on charges should be included.	In 2017, the CAA provided a report (CAP 1576) with recommendations pertaining to charges and we will investigate how these could be implemented. This report can be found on the CAA's website: www.caa.co.uk	Action 1.4

THEME OR ISSUE IN RESPONSE TO CONSULTATION	HEATHROW RESPONSE	REF OR ACTION
How would the noise certification database audit affect noise levels?	If noise certificates are incorrect, the landing fees may be wrong, some noisy aircraft may land for the price of a quiet type (or vice versa) and the incentive to operate with quietest aircraft type would be ineffective.	Action 1.6
Fines should be introduced or increased for night flights, missed CDO/CDA, pre-04:30 flights.	The fining regime is based on the regulations in the UK Aeronautical Information Publication (AIP) which is set by the CAA. More information can be found in Annex 8 or at: www.ais.org.uk For noise improvement outside of the measures covered in the AIP, we have a range of methods such as incentives (e.g. differential landing fees), voluntary agreements such as the Quiet Night Charter and promotional schemes such as Fly Quiet and Green (FQG): www.heathrowflyquietandgreen.com Continuous Descent Approaches (CDA), for example, are included in FQG but cannot be enforced by fining, as sometimes an aircraft can be directed not to follow the protocol by air traffic control.	Annex 8
Breaches should be published in the Noise Action Plan.	Some data are published in Annex 4 but more regularly updated data is available on the Heathrow noise website: www.heathrow.com/noise	Annex 4 and Action 5.1
Information on the fines and the amount spent on community projects should be published in the Noise Action Plan.	We fine airlines for the breaking the departure noise limits. The fines are combined with money donated by Heathrow and each year this money is distributed by the Heathrow Community Fund to local community projects. More information about the Heathrow Community Fund and how this money is spent can be found at: www.heathrowcommunityfund.com	
Quieter procedures including Flight Tracks and Airspace		
Quieter procedures only relate to aircraft within the airport boundary	The procedures we can manage generally cover the stages of the take-off and landing up to 7000 ft above airport level in accordance with the Air Navigation Guidance 2017. This is far beyond the airport boundary.	
AIP rules such as noise limits at 6.5km should be made more stringent. Noise limits should be published. Noise limits established more than 20 years ago are out of date and do not correspond to today's aviation technology. Noise limits should be different for day and night and for different distances.	Noise limits in the AIP are imposed by the Government and are reviewed periodically. Rules cannot be arbitrarily tightened as they would effectively become operating restrictions. For AIP limits see Annexes 5 and 8 which include different rules for day and night. The Government periodically reviews these noise rules including the levels, time of day and monitoring locations.	Action 2.4 and Annexes 5 and 8.
What is the present proportion of aircraft doing using full thrust take-offs? The proportion of aircraft using full thrust take-off must be monitored and recorded in any action plan.	The thrust setting on an aircraft during take-off will mainly depend on the fuel load governed by destination and the weather conditions. All aircraft will cut-back at some stage, this will usually be before 6.5km where the AIP noise monitors are located.	

15 COLLABORATION AND CONSULTATION 2017 AND 2018

THEME OR ISSUE IN RESPONSE TO CONSULTATION	HEATHROW RESPONSE	REF OR ACTION
<p>Required climb rates should be increased. All aircraft departing Heathrow should be required to fly NADP1 with flaps down until 3500ft or higher.</p> <p>Heathrow's departure angles are lower than other major airports. Heathrow has no noise abatement procedure in accordance with ICAO guidelines</p>	<p>We support the concept of continuously improving operating procedures to reduce noise impacts but we have to carefully balance the consequences of any changes to operating procedures. Increasing aircraft climb rates for example may get planes higher more quickly but they may be noisier for those living closer to the airport, as aircraft would use a higher level of thrust.</p> <p>Requirements must be realistically achievable and changes should avoid unintended consequences such as increasing noise in other areas.</p> <p>The airport cannot mandate the NADP procedure; it is a choice for the airlines.</p> <p>Recent studies indicate climb rates at Heathrow are comparable with other major airports.</p> <p>Throughout 2018, a steeper departure trial on one of the easterly departure routes has been in place to assess the noise, environmental and operational impacts of raising climb gradients The finding of this report will be published in 2019 (See Action 2.4).</p>	Action 2.4
<p>Fly Quiet and Green (FQG) review should be earlier, in 2019.</p>	<p>FQG was reviewed in 2017 and it was concluded the table should be allowed to run for a few years to allow the airlines to work on improving their performance and rankings. Modifying FQG too frequently will make the league table rankings meaningless and not assist with engaging and encouraging airlines to improve.</p>	Action 2.3
<p>We are aware of criticism by aviation consultants AvGen of how these are reported and consider that the points they raise about the discrepancies between actual performance of certain airlines and their ratings should be investigated further by Heathrow. FQG programme criticism by AvGen should be explained.</p>	<p>This was discussed and recorded in the minutes at the Heathrow Community Noise Forum in September 2017. https://www.heathrow.com/file_source/HeathrowNoise/Static/HCNF_meeting_notes_20_Sept_2017.pdf Also see the outcomes mentioned in Annex 13, Action 2.1.</p>	Action 2.3
<p>Approaches/routes for different airports should not overlap/should not overlap below 5000ft.</p>	<p>Due to the locations of the various airports around London it is sometimes necessary for different arrival and departure routes to overlap. All seven major London airports are involved with the development of new arrival and departure routes ensuring de-confliction of flight paths below 7000 feet. Safety takes primacy on all occasions.</p>	

THEME OR ISSUE IN RESPONSE TO CONSULTATION	HEATHROW RESPONSE	REF OR ACTION
Arrival and departure patterns need to be mandatory.	<p>Aircraft taking off from Heathrow follow pre-defined routes which have been in place since the 1960s. However, on occasions planes may be directed to take a different route by air traffic controllers for a number of reasons such as severe weather conditions or another aircraft such as a police helicopter that is flying within the departure route.</p> <p>Aircraft landing at Heathrow must be in line with the runways as they come into land. However, there are no set routes for planes moving from the holding stacks to the final approach as air traffic controllers have to manage the order of the aircraft from all four stacks and guide them safely onto one of Heathrow's two runways.</p> <p>In the future, however, airspace in south east England is being redesigned as part of implementation of the Government's Airspace Modernisation Strategy. This will see the redesign of Heathrow's flight paths. Heathrow plans to undertake the process to modernise its airspace at the same time as the airport is expanded. We began consulting on this 2018 and there will be a number of other opportunities through further consultations and ongoing engagement for stakeholders to help shape the designs of our future flight paths.</p>	Action 2.14
Compton easterly departure route should be abandoned.	Track keeping compliance for the Compton easterly departure route is much lower than Heathrow's other departure routes. This is because aircraft are sometimes directed off the route to avoid aircraft that are coming in to land from one of the holding stacks. With the coming expansion airspace redesign, Heathrow will be redesigning all its arrival and departure routes.	
Multiple flight paths for arrivals are needed (for example in a Herringbone pattern). Curved approaches should be introduced at Heathrow.	Regardless of Heathrow expansion, the redesign of airspace is taking place across the UK as the Government embarks on its airspace modernisation strategy. As part of this, Heathrow will be redesigning all of its arrival and departure routes and within this there will be opportunities to utilise new technologies.	Action 2.14
<p>Flight paths should not be concentrated</p> <p>PBN should not be used</p> <p>Flight paths should be spread out over a wider area</p> <p>Flight paths should avoid hospitals/schools etc.</p> <p>The joining point should be moved west to reduce noise.</p> <p>Noise Action Plan should include measures/ study to mitigate Performance Based Navigation (PBN).</p>	<p>In the future the use of PBN will be mandated as part of the Government's airspace modernisation strategy. This will see the redesign of Heathrow's flight paths. Heathrow understands the use of PBN in the future will be a concern to some communities because it will mean routes become narrower than today. Because of this, Heathrow is committed working with residents, local stakeholders and the aviation industry to find ways to implement PBN without a significant increase in the noise impact for our surrounding communities.</p>	Action 2.13 and 2.14
Full runway alternation should be put in place (both easterly and westerly operations).	Heathrow cannot run a full schedule of departures from the northern runway on easterly operations as the infrastructure is not in place. Permission for this infrastructure is being sought along with the expansion of Heathrow and the proposals for the third runway.	

15 COLLABORATION AND CONSULTATION 2017 AND 2018

THEME OR ISSUE IN RESPONSE TO CONSULTATION	HEATHROW RESPONSE	REF OR ACTION
Levels of impacts have increased because of concentrated flight paths, heavier noisier planes and low and night flying.	Our noise footprint has shrunk considerably over the past few decades and is the smallest it has ever been. (See our 2016 Noise Contour report at www.heathrow.com/noise) Although the vast majority of areas have seen a reduction in noise we acknowledge that there are a few areas which have experienced increases in noise exposure. There are many factors that can affect an individual's perception of change in noise or activity, even when no significant difference can be objectively measured.	Action 5.10
Heathrow has no control over airlines' Standard Operating Procedures (SOPs) and so commitments on quieter procedures are meaningless. Target for airline compliance of three years is too generous.	We work closely with all the airlines that use Heathrow to work towards the implementation of all the quieter procedures that we have identified. Our Fly Quiet and Green programme and the Minimum Performance Standard action, targeting new, smaller airlines, are examples of this.	Actions 2.1, 2.2 and 2.7
Annex 6 should provide information on all noise control procedures.	While the information in this Noise Action Plan is as comprehensive as possible, each airline will have its own Standard Operating Procedures.	
Land-use planning and Noise Insulation Schemes		
Some councils indicated support for the land-use planning actions. ICAO land use priority is unworkable	Local planning guidance and a position paper on encroachment should be developed in collaboration with local authorities. ICAO recommends land-use planning, but this is not the responsibility of the main aviation industry stakeholders. Local authorities need to be engaged and good land use planning can only be achieved through collaboration.	Actions 3.6 and 3.8
ICAO balanced approach – land use requires future flightpaths to be published	The principles of land-use planning including zoning and noise insulation schemes can be developed without regard to specific future flightpaths. For the purposes of this Noise Action Plan, land use planning should be based on today's flight paths. Regarding future airspace design, this will be refined in the next few years which will include two public consultations and would trigger a revision of this Noise Action Plan.	
The current schemes are complicated, inadequate, do not cover a wide enough area and should meet APF requirements.	We are proposing to develop a new Noise Insulation Strategy to consolidate and simplify the processes. This will meet or exceed Government policy, some of which is still under development.	Action 3.3 and Section 4
Home ventilation should be offered because insulation is ineffective on hot days.	Under our existing insulation schemes, when the windows are replaced within homes noise-attenuated mechanical or passive ventilation is supplied to allow outside air to enter the home.	
Compensation and noise insulation scheme needs to cover the LOAEL.	Our existing insulation and compensation schemes are compliant with or exceed current Government policy requirements. We are committed in this Noise Action Plan to review our Noise Insulation Strategy and this will take account of any changes in Government policy.	

THEME OR ISSUE IN RESPONSE TO CONSULTATION	HEATHROW RESPONSE	REF OR ACTION
Coverage area is arbitrary with one home eligible and the next ineligible.	While we appreciate it must be frustrating for those living just outside the zone boundaries, our schemes are based on Government contours and have to be applied in a fair and consistent manner to all local residents. We are therefore unable to make exceptions to properties that do not fall within the agreed boundaries. Insulation schemes are based on objective measures of noise and cannot, in practice, be based on subjective responses to noise and aircraft events. Virtually any land-use scheme will result in dividing lines running between houses in close proximity.	
Homes affected by noise from ground level activities should be included in the noise insulation scheme.	The Ground Noise Management Plan will consider noise management and mitigation.	See Action 2.17
Easterly departures are not adequately covered.	We note this feedback and refer to Actions 3.1 and 3.3 where we will be reviewing our Noise Insulation Scheme and launching a new strategy.	
Operating restrictions		
Clarify 480000 ATM planning condition or cap.	The 480k annual ATMs cap is a result of the Terminal 5 planning conditions. As an existing condition this Noise Action Plan is limited to noise management within this cap. Should the limit be changed, an update of this Noise Action Plan will be required.	
Exempted aircraft should be included in ATM limits.	Exempted aircraft include: <ul style="list-style-type: none"> • Helicopters • Aircraft landing in an emergency situation • Smaller aircraft (with a passenger capacity of 10 seats or less • Visiting Heads of State, royal and Government flights We do not think that these aircraft need to be included in the ATM limits due to the fact that they are small in size and/or their use is rare.	

15 COLLABORATION AND CONSULTATION 2017 AND 2018

THEME OR ISSUE IN RESPONSE TO CONSULTATION	HEATHROW RESPONSE	REF OR ACTION
Night flights		
<p>Night flights should be banned for a 7- or 8-hour period.</p> <p>A ban of 8 hours is needed to align with WHO guidelines.</p> <p>Noise quota limits are too high.</p>	<p>Night flights at Heathrow are heavily restricted by the Government which recognises the economic benefit of some night movements and that some are necessary to operate a major hub airport. Between 23:00 and 07:00 there are controls on the type of aircraft allowed to operate. The period between 23:30 and 06:00 is more restrictive and includes limits on the number of movements allowed.</p> <p>Restrictions on night flights have been in place at Heathrow since 1962 and the structure of the current night flying restrictions at Heathrow has been in place since October 2017. The Night Flight restrictions are part of the Government defined noise measures under the Civil Aviation Act 1982. For more information on night flights go to: https://www.heathrow.com/noise/heathrow-operations/night-flights</p> <p>The majority of flights finish at Heathrow by 23:30, however sometimes late arrivals or departures are unavoidable for a number of reasons. We are working with the airlines and NATS to reduce the number of flights that operate later than scheduled as we know they are disruptive to local residents.</p> <p>In its public consultation on expansion and airspace change, Heathrow recently asked for comments on a proposed new scheduled night flight ban of six and a half hours. Further information will become available on: www.heathrowconsultation.com</p>	
<p>Night flights should be penalized or fined.</p>	<p>Fines are levied on airlines when they break the noise regulations which are more stringent at night. Action 1.4 will consider CAA recommendations on charges which include changes to night time flights.</p>	<p>See Action 1.4</p>
<p>The Quiet Night Charter is unexplained.</p>	<p>We are aiming for the QNC to be launched in October 2018 after the August submission of the draft Noise Action Plan to the Government (DEFRA).</p> <p>More information on the QNC will be published on Heathrow's noise website when it is launched.</p>	
<p>Flights in the shoulder periods should be reduced.</p>	<p>While there is no restriction on the number of flights allowed during the shoulder periods (i.e. 23:00-23:30 and 06:00-07:00), there are controls on the type of aircraft allowed to operate during these times. The Government consults on their night flight regime for Heathrow every five years. One of the objectives is to limit or reduce the number of people significantly affected by aircraft noise at night, for example by encouraging the use of quieter aircraft, while maintaining the existing benefits of night flights.</p>	
<p>Halving later running departures is inadequate.</p>	<p>We think that the halving of late running departures is an appropriate target. While our overall goal is always to reduce the number of flights that run late into the night, Heathrow needs to be able to maintain a degree of flexibility in order to maintain schedules and timetables that are often influenced by global factors.</p>	

THEME OR ISSUE IN RESPONSE TO CONSULTATION	HEATHROW RESPONSE	REF OR ACTION
Larger/noisier aircraft should take off earlier.	Some of the aircraft that are taking off later in the evening are travelling long distances and because of the time differences they may need to depart Heathrow at this time in order to land at an appropriate time at their destinations. As part of the Noise Action Plan we are proposing to continue to encourage airlines to use their most efficient and quietest aircraft.	
Aircraft arriving before 04:30 and holding prior to landing cause noise. Information/statistics on this should be made publicly available.	Action 5.1 commits us to looking at the range of data and tools that we routinely make available.	Action 5.1
Communications and engagement with stakeholders		
Web-based information tools are appreciated and some improvements suggested. Noise monitor locations should be published.	Heathrow works and invests in tools to stay at the forefront of airport noise management and communication tools and we are continually looking to improve these tools. Noise monitoring information is available on the WebTrak online tool.	Action 5.1
Reports should be published.	Reports are published regularly on the Heathrow Noise website. Heathrow works to ensure that all appropriate reports and research findings are published in a timely manner wherever possible.	Action 5.1
Advance warning to residents of any trials is required.	Heathrow is committed to working with local communities and will ensure that communities are made aware of any trials by informing bodies such as the Heathrow Community Noise Forum and Heathrow Community Engagement Board; and will publish information on the Noise website and Twitter account.	See Actions 5.1 and 5.3
Community engagement should include communities further away from the airport.	Heathrow has a long-established local engagement programme through various forums. Over the years these groups have provided us with an insight into the key community issues relating to noise. The Heathrow Community Noise Forum is made up of representatives from 14 local authorities around the airport and invitations have been extended to further areas. Heathrow also intends to hold briefings for local authorities located further away from Heathrow to establish an ongoing dialogue with these areas.	
Complaint map doesn't show complaints from central, south and east London.	The complaint map in the supporting annex shows all the complaint locations in 2017.	Annex 4
Better communications and explanations on complaints and trials are needed.	When responding to complaints we aim to provide a full and comprehensive service. All complaints are reported daily on our Heathrow Operational Data website and quarterly to the Heathrow Community Engagement Board (HCEB).	Action 5.8
Commentary needed on complaint information in Annex.	This has been added.	Annex 4
What happens to complaints and do they make a difference.	All complaints are reported daily on our Heathrow Operational Data website and quarterly to the Heathrow Community Engagement Board (HCEB). We monitor complaints for trends to inform our noise management priorities but flight paths are not changed purely on the basis of the number of complaints received from a particular area.	

15 COLLABORATION AND CONSULTATION 2017 AND 2018

THEME OR ISSUE IN RESPONSE TO CONSULTATION	HEATHROW RESPONSE	REF OR ACTION
Noise metrics		
<p>Questions raised in this category asked for clarification of what an annoying noise could be and whether the repetitive nature of aircraft noise should feature more prominently in Heathrow's calculation of the impacts of noise on affected communities.</p> <p>Over-flight metrics too narrow.</p> <p>Noise reduction benefits not shared equally nor perceptible in daily life.</p>	<p>The minimum requirements for noise metrics are specified in the EU and UK regulations and these include time-averaged metrics such as L_{den} and L_{night}. In addition, and in close collaboration with the Heathrow Community Noise Forum, we report and manage data with a large range of other noise metrics, many based on individual events. For reference, see our END noise contour reports and the Community Information noise reports on our Noise website.</p> <p>We acknowledge that no set of noise metrics will ever be able to represent the range of perceptions and subjective nuance of aircraft noise experienced by community members. The use of different noise metrics is in continual review and we are open to expanding the way we measure and report noise as issues and requests are raised.</p>	
<p>We need a wider range of ways to measure noise that people can understand and relate to. Metrics based on average noise levels are inadequate. We need flight number or event frequency-based metrics.</p>	<p>Time-averaged noise metrics do have their place for comparing overall impact, noise reduction trends and assessing the benefits of many and various mitigation initiatives. EU and UK law require the use of L_{eq}-based strategic noise maps and the majority of studies on the health impacts of noise use these metrics.</p> <p>We recognise that time-averaged metrics do not tell the whole story and we produce reports with a wide range of metrics and continue to support the development and presentation of supplementary metrics. This is demonstrated in our annual Noise Contour reports and the Community Information Reports available on our website.</p>	
<p>Separate noise mapping should be shown for easterly and westerly operations.</p>	<p>These are included in our 2016 and 2017 Airport Noise Contour reports. See www.heathrow.com/noise.</p>	
<p>Noise thresholds should be lower to account for annoying/unwanted noise. LOAEL should be used to identify impacted communities.</p>	<p>Noise contours are not used to classify areas as "not impacted" by noise. They are used to identify areas of highest impact that need to be prioritised for mitigation and where new noise-sensitive activity should be discouraged or prevented. In areas outside the noise contours, some people may still find that aircraft noise is annoying or unwanted.</p>	
<p>Improvements in technology should deliver an improvement in noise rather keep it at the same level.</p> <p>Noise reduction benefits not shared equally nor perceptible in daily life.</p>	<p>We agree with the principle of sharing the benefits of noise reduction communities and the aviation industry. If airlines invest in quieter aircraft and procedures, they should be able to increase passenger movements and still reduce overall noise levels. The reducing area of Heathrow's L_{den} and L_{night} contours is evidence that noise is reducing and passenger movements are increasing.</p>	
<p>'Best available techniques' should be used to reduce noise rather than the 'where possible' used in the Heathrow 2.0 strategy to be in line with the Noise Policy Statement for England (NPSE).</p>	<p>Our ambition with Heathrow 2.0 is consistent with current Government aviation policy. We would support the concept of best available techniques within the context of sustainable development in alignment with the NPSE.</p>	

<i>THEME OR ISSUE IN RESPONSE TO CONSULTATION</i>	<i>HEATHROW RESPONSE</i>	<i>REF OR ACTION</i>
Noise monitoring and forecast projections		
Monitoring data should be included in the Noise Action Plan.	Data from noise monitoring is available live on WebTrak and other web-based tools as well as the Community Information Reports and the annual Noise Contour Reports. The Noise Action Plan is a five-year strategic plan and noise monitoring information would complicate rather than clarify issues.	
Background noise levels should be monitored.	Background noise is an important factor that has to be taken into account in order to get an accurate picture of the noise environment for an area. Local noise sources such as road noise can make aircraft noise measurements impractical.	
Modelling is in error and noise certificates do not match actual noise levels experienced.	The CAA conducts the noise modelling for Heathrow using the ANCON model required by the government and the process includes verification based on measurements from our network of over 40 calibrated noise monitors. The CAA continually review ANCON to ensure that it is as accurate and verified as it can be.	
10-year forecasts should be undertaken.	An item to develop process for the 10-year and annual five-year forecasts has been included in the draft Noise Action Plan, although it should be noted that the longer the forecast period, the less reliable will be the results.	See Action 5.11
How realistic/successful were previous forecasts/predictions for 2018	A comparison of the forecast contours for 2018 and the results in the 2016 strategic noise maps is provided in Section 6.	See Section 6.
Not appropriate to use statistics for alternative population trends.	Since the first Strategic noise maps in 2006 our L_{den} contour has reduced in area by 19% although the population within this contour has only reduced by 6%. We believe that it is appropriate to point out that if the population had not grown in that noise impacted area, the decrease in population within the contour would have been 21%. This highlights the need for effective land-use planning and encourages us to seek the collaboration of local authorities to prevent encroachment into the highest noise areas.	
Heathrow Expansion and Airspace Change		
The Noise Action Plan does not address the proposed expansion of Heathrow, the third runway, airspace change or new flight paths.	The Noise Action Plan addresses the activities for which we have permission at the time of writing. Heathrow expansion including the option for an additional 25,000 movements or permission for a third runway, and changes to airspace will require their own permitting processes including assessments of effects and mitigation plans. If granted, these would each require the Noise Action Plan to be updated at the time.	
There were various specific and general requests related to the airspace design principles and detailed items.	These items will be addressed during the airspace change process for expansion including two more public consultations in coming years. The outcomes including conditions and noise mitigation measures will need to be incorporated into an update of this Noise Action Plan.	
ICAO balanced approach - land use requires future flightpaths to be published	This relates to the consultation on airspace design principles without draft flight tracks. We believe that we can and need to develop land-use management principles without knowing exactly where the flight tracks will be. Further consultations will be held as the design process advances.	

15 COLLABORATION AND CONSULTATION 2017 AND 2018

<i>THEME OR ISSUE IN RESPONSE TO CONSULTATION</i>	<i>HEATHROW RESPONSE</i>	<i>REF OR ACTION</i>
Noise Action Plan Consultation		
Consultation was inadequate/lack of engagement/advertising/won't achieve anything.	We leafleted addresses around Heathrow, advertised in local newspapers and on social media to publicise and get feedback on the draft Noise Action Plan. We also held consultation events at the Heathrow Academy. The comments we received have been analysed and we have made changes to the draft Noise Action Plan where it has been possible to do so.	See Annex 15 text above.
Consultation was too soon after previous consultations (expansion).	We always try to make sure that there is clear space between not only our own consultations but other consultations that may be happening at the same time. We also try to avoid holiday periods and elections (and their corresponding purdah periods) and it is sometimes very difficult to schedule consultations around all these constraints. The new Noise Action Plan has to be in place for the start of 2019 and therefore consultation needed to take place at an early enough stage for the results to be analysed and potential changes made.	
There are discrepancies between the recently concluded Airspace Principles Consultation (Jan-Apr 2018) and the consultation on the Noise Action Plan.	The recent consultation on the principles for airspace change for expansion at Heathrow are separate to the proposals contained within the Noise Action Plan. The Airspace Principles consultation sought feedback on our future approach to the revision of flight paths to and from an expanded three-runway Heathrow. We have been very clear that this consultation for the Noise Action Plan 2019-2023 applied to the existing two runway operations at Heathrow.	
Health and social impacts		
WebTAG should be used to assess the quantitative impact of each noise mitigation measure.	We do not believe that analysing each of 52 actions with WebTAG would be worthwhile. Some actions such as noise monitoring would not be considered to be worthwhile using WebTAG but clearly have a value in seeking to improve our noise management. We accept that some impact costing and comparison analysis could be useful and we have added the task of a WebTAG-like analysis to the annual task on forecast contours in Action 5.11.	See modified Action 5.11
Health/well-being impacts not addressed/deficient – should be costed/independent study carried out.	Heathrow supports and encourages independent research and also funds work where we believe there is a lack of understanding e.g. the recent work on respite. We are developing a Noise Research Roadmap to encourage researchers to work on issues most relevant to airport operators and stakeholders.	Actions 5.12, 5.13 and 5.14
Geography and the extent of Noise Action Plan		
The noise contours do not extend to all boroughs such as south-east London, Bagshot, Lightwater, Windlesham and the area administered by Surrey Heath Borough Council.	The noise contours show the areas of highest noise and, by definition, do not extend to areas with noise lower than the outermost contours. Flight track maps (Annex 3) and the noise complainant map (Annex 4) include the wider area. We understand that residents in those outer areas may still feel affected by aircraft noise. However, the contour maps show that, measured objectively, the average noise level further out is less than the average noise level closer in.	Annexes 3 and 4
Noise from aircraft going to or from other airports is not considered.	Our Noise Action Plan can only address the activity associated with Heathrow. Just as we are not addressing the cumulative impacts of road and rail noise, we cannot include the assessment of other airports.	Section 2

THEME OR ISSUE IN RESPONSE TO CONSULTATION	HEATHROW RESPONSE	REF OR ACTION
Other issues raised		
The Government should introduce a regime of regulatory control.	Heathrow is required to produce a Noise Action Plan which is submitted to the Government (DEFRA) for approval. DEFRA will hold us to account as will local communities and stakeholders.	
Noise Action Plan should highlight that Heathrow has the largest 55dB L _{den} noise contour area when compared to other European airports.	The Noise Action Plan is focussed on noise management at Heathrow and we recognise that it is important that we continue to liaise with other airports to learn from each other. The unique circumstances of individual airports, however, mean that direct comparisons of this sort are not appropriate or helpful in shaping the best set of actions for Heathrow's Noise Action Plan.	
Heathrow should concentrate on strategic connectivity rather than tourists.	Heathrow cannot discriminate between passengers on the reason for their journey.	
How are the Noise Action Plan actions and their benefits measured?	<p>The draft Noise Action Plan for consultation included some draft performance indicators and targets. After consideration of the responses to the consultation and subsequent modification to the draft actions, these have been revised for the submission to DEFRA.</p> <p>Each action within the Noise Action Plan has a performance indicator, which is usually an item or quantity that can be regularly tracked and reported, and a target, representing a milestone to strive for and achieve. The target may differ from the performance indicator.</p>	See Action 5.16 and Sections 8 and 9
Some on-going actions have no indicators or targets.	Draft actions that were on-going work without specific targets rather than specific actions have been moved to the narrative in Section 5 on the Noise Management Framework. This includes the action regarding new ICAO standards (1.8) and the review of Dispensation Guidance (4.3). The action for supporting forums such as ANMAC, ANEG and ICCAN (2.12) has been incorporated into Action 5.3, as feedback from these groups will be reported to the HCNF.	See Action 5.3
Ground noise. High barriers around the airport perimeter would provide respite.	The Ground Noise Management Plan will aim to improve the assessment and management of ground-based noise sources which are not included in the strategic noise mapping. These sources are dominated by engine ground runs, aircraft taxiing and auxiliary power units (APU). Noise reduction and mitigation options will be considered. This work will be conducted in addition to the minimum government requirements of our Noise Action Plan.	See Action 2.18
More information on the interdependencies with air quality/ emissions is required.	Section 4 of the Noise Action Plan highlights the interdependencies between noise and emissions. More information on our actions in this area can be found in our Emissions Strategy and Action Plan: www.heathrow.com/emissions	See Section 4
Working with the aviation/airline industry and local communities is incompatible as they have different objectives. The benefits of the Noise Action Plan should be shared equally across all communities.	We have to work closely with all of our stakeholders and try to balance the needs of each. The Noise Action Plan and the collaborative approach to its drafting are a good example of how we try to do this. Additionally, for any one noise reduction initiative, some communities may receive more noise benefit than others. The focus of the Noise Action Plan is to control and manage noise for all but we do acknowledge that some communities are more affected by aircraft noise than others.	

<i>THEME OR ISSUE IN RESPONSE TO CONSULTATION</i>	<i>HEATHROW RESPONSE</i>	<i>REF OR ACTION</i>
The draft Noise Action Plan does not demonstrate progress on the previous Key Performance Indicators.	See Annex 16 which has a comment on each of the KPI in the old Noise Action Plan. The Noise Action Plan has a Performance Indicator and a Target for each of the actions. We have also committed to publish an annual progress report.	Annex 16
The draft Noise Action Plan does not provide any information on the impact of noise on wildlife.	The consideration of the impacts of noise on wildlife is not a requirement of the EU Directive or UK regulations.	
The Noise Action Plan referring to Heathrow 2.0 but not expansion is contradictory.	Heathrow 2.0 sets out Heathrow's plan to become a leader in Sustainability and is not solely focussed or dependent on the expansion of Heathrow or the construction of a new runway.	
Independent expert advice should be provided to the Heathrow Community Noise Forum and this should be specified in the Noise Action Plan.	This is specified in Action 5.3.	Action 5.3

16 KEY CHANGES IN THE ACTIONS AND KPI'S FROM SECOND NOISE ACTION PLAN

Actions

Heathrow's first Noise Action Plan covered the period 2010 to 2015. It contained 66 actions. For the second Plan 2013 to 2018, there were 44 actions divided into the five pillars of the noise management framework. At the time of writing nine of these were either complete or discontinued (See Annex 13.) The new Noise Action Plan for

2019 to 2023 has 52 actions. Most are retained or updated from the previous plan; about 15 are new (although some of these are continued work on specific procedures). The Quiet Night Charter incorporates four actions from the previous Noise Action Plan. The table below summarises these developments.

	NUMBER OF ACTIONS							
	2013-2018	2019-2023	Retained	Updated	Complete	Discontinued	QNC	New
Quieter Planes	6	7	3	2			1	2
Quieter Procedures	10	17	1	5	2	1	1	8
Land-use planning and mitigation	8	7		5	1	2		2
Operating restrictions and voluntary measures	5	4	2	(1)		2	2	1
Working with local communities	15	17	4	10	1			3

Key Performance Indicators – old versus new

As shown below the Key Performance Indicator (KPI) structure has been kept the same. Six KPI from the old Noise Action Plan are retained or modified.

Four have been discontinued mainly because their metrics were not measurable or meaningful. Four KPI are new.

OLD KPI – NOISE ACTION PLAN 2013-2018	DISCUSSION	REFERENCE DATA		KPI NOISE ACTION PLAN 2019-2023
Key END Summary Statistic				
1. Area of noise contours (L_{den}/L_{eq})	Retain with the addition of Number Above contours	See Annex 5	KPI 1	Area of annual noise contours ($L_{den}/L_{eq}/N70/N65/N60$)
Quieter Planes: Measures of Fleet Mix				
2. Moving annual percentage of Fleet Mix within the charging categories	Retain	Chapter 3 aircraft movements reduced from 11% in 2010 and 1.40% in 2013 to 0.4% in 2017	KPI 2	Moving annual percentage of fleet mix movements within the charging categories
			KPI 3	Percentage of A320-family movements by retrofitted aircraft

16 KEY CHANGES IN THE ACTIONS AND KPI'S FROM SECOND NOISE ACTION PLAN

OLD KPI – NOISE ACTION PLAN 2013-2018	DISCUSSION	REFERENCE DATA		KPI NOISE ACTION PLAN 2019-2023
Quieter Procedures: Measures of Operation Performance				
3. Number of airlines achieving minimum AIP performance standards	Discontinue.	New KPI 5 and Action 2.1 cover this better.		
6. QC and movement usage statistics	Discontinue – new KPI 8 will be more meaningful to residents	In 2016 the total QC (8hr night) was 26072		
			KPI 4	a. Track keeping compliance (excluding 09RCPT) and b. CDA.
			KPI 5	In Fly Quiet and Green, the number of green dot performance ratings.
Land-use Planning and Mitigation: Measure of Implementation of Schemes				
4. Number of eligible households/noise sensitive buildings registered for insulation schemes	Modify to track houses complete in KPI 6	As at Q2 2018 we have completed homes in the following schemes: QHI 542, Day 4603 and Night 4697.	KPI 6	a. Percentage of eligible properties registered b. Number of registered properties with completed insulation installation.
5. Report of overall satisfaction with insulation scheme	Retain – new KPI 7	In 2016, 71% of survey respondents agreed their quality of life had been impacted positively by the scheme. In 2017 it was 66%.	KPI 7	Rate of overall satisfaction with the insulation scheme from annual survey
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
Working With Local Communities				
7. Public perception as rated by polling	Retain in new KPI 9	2018 Survey: "Heathrow does all it can to manage noise." 38% agree, 33% disagree.	KPI 9	Public perception of Heathrow as rated by annual polling
8. Complaint Response Time	Discontinue – metric not easily tracked or meaningful.	Response times are standard procedure and contractual requirements.		
9. Biennial ranking in operational noise management	Discontinue – surveys not useful	Surveys conducted in 2014 and 2016 then discontinued.		
General Noise Action Plan Processes				
10. Percentage of actions on track	Retain in new KPI 10	See Annex 13	KPI 10	Percentage of actions on track or complete.

17 FORECAST 2023 CONTOURS AND RESULTS

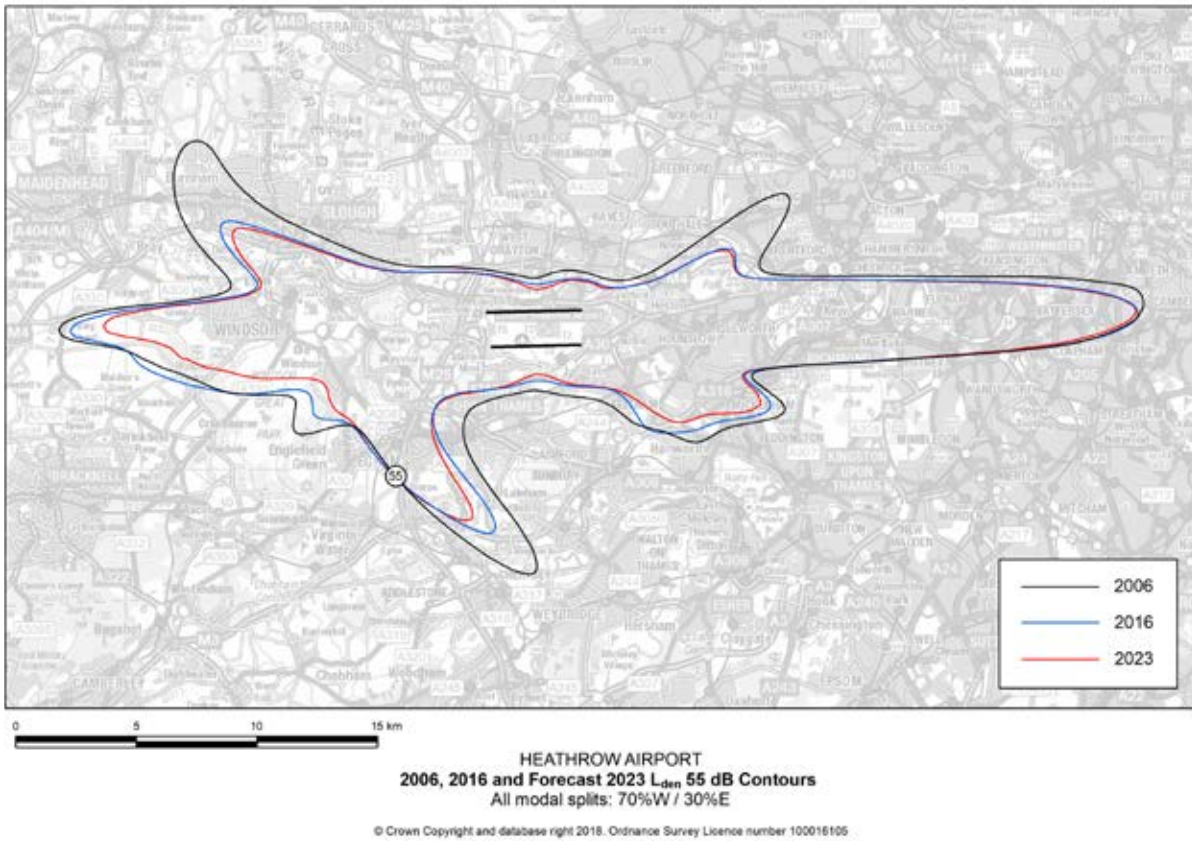


Figure 1: 2006, 2016 and forecast 2023 L_{den} 55dB contours

<i>L_{DEN}</i>	<i>AREA (KM²)</i>			<i>POPULATION (000'S)</i>			<i>HOUSEHOLDS (000'S)</i>		
	2006	2016	2023	2006	2016	2023	2006	2016	2023
>55	244.7	198.0	179.1	756.1	689.4	665.5	338.5	286.1	277.9
>60	92.7	74.5	68.4	194.6	195.6	185.2	81.6	74.5	70.7
>65	37.1	28.9	26.0	54.3	44.5	42.6	21.4	15.4	14.8
>70	13.7	9.5	8.1	9.6	4.8	3.3	3.5	1.7	1.1
>75	5.0	3.4	3.0	0.7	<0.1	<0.1	0.3	<0.1	<0.1

Note: The 2016 population and household counts are based on an updated 2016 CACI population database based on the 2011 Census. The 2023 population and household counts are based on an updated 2017 CACI population database based on the 2011 Census.

17 FORECAST 2023 CONTOURS AND RESULTS

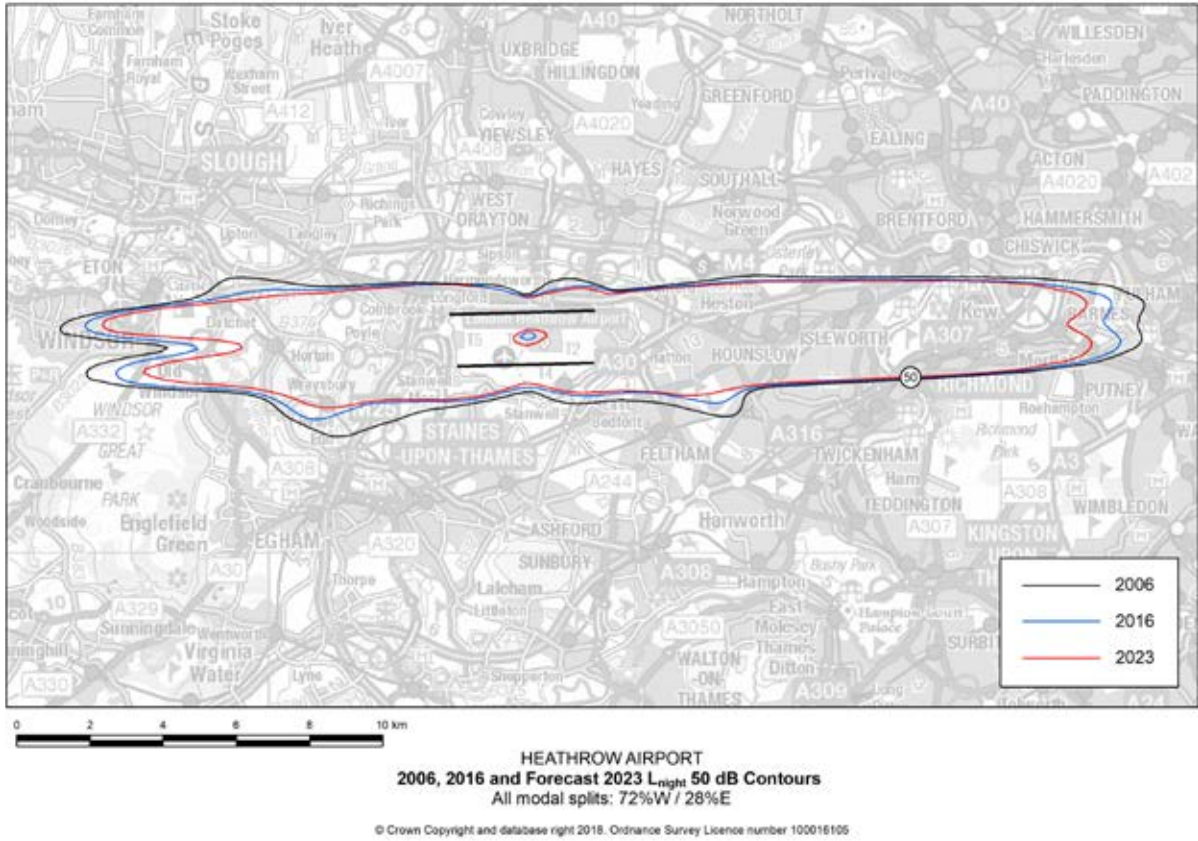


Figure 2: 2006, 2016 and forecast 2023 L_{night} 50dB contours

<i>LDEN</i>	<i>AREA (KM²)</i>			<i>POPULATION (000'S)</i>			<i>HOUSEHOLDS (000'S)</i>		
	2006	2016	2023	2006	2016	2023	2006	2016	2023
>50	84.4	74.0	66.7	207.2	221.2	207.5	88.9	86.3	80.6
>55	34.2	26.5	22.4	62.0	62.4	55.5	24.1	21.6	19.2
>60	119.	8.6	6.9	16.3	10.9	7.7	6.0	3.4	2.4
>65	4.5	3.0	2.5	1.7	1.1	0.5	0.6	0.3	0.2
>70	1.8	1.4	1.0	0.1	0.0	0.0	<0.1	0.0	0.0

18 FINANCIAL INFORMATION

Indicative annual financial expenditure (to Heathrow) on noise management activities

<i>TYPE</i>	<i>DESCRIPTION</i>	<i>APPROXIMATE ANNUAL COSTS (£000) 2019-2023</i>
Staff costs	Includes salary and training costs for elements of the Communications, Community Engagement, Airspace and Noise Performance Team, Sustainability and Environment compliance teams	£1,300
Noise and Track Keeping Equipment (Hardware and Software)	Renewal, calibration, repair, software licences, support development	£1,005
Publication and communications	Seminars, documents, website	£330
Noise insulation and mitigation schemes	Quiet Homes Scheme, Community Buildings and Home Relocation Schemes	£9,000
Consultancy support	Audit, forecasting, noise studies, benchmarking	£625

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