

HEATHROW DET09 STEEPER DEPARTURE TRIAL

INTERIM BASELINE PRESENTATION



Heathrow
Making every journey better

Background

The Heathrow Community Noise Forum, HCNF, was set up in 2015 in response to local concerns regarding future changes to airspace as a result of the Government's Future Airspace Strategy. The HCNF is made up of representatives from 12 local authorities around Heathrow as well as NATS, BA, DfT, CAA and Heathrow Airport Limited (HAL)

Concerns were raised by community representatives of the Operations and Procedures Working Group, a sub-group of the HCNF, that a gradual decrease in climb performance on the DET 09 departures had occurred over previous years, in particular with the performance and operation of the A380.

In response to these concerns Heathrow commissioned multiple studies to investigate.

These studies concluded that over the past 5 years there has been:

- A significant increase in A380 departures from Heathrow
- Approximately 30 more DET departures per day.
- A small increase in concentration along SID centrelines
- A small decrease in climb performance.
- The acclaimed noise benefits of the A380 are not being realised by the overflowed communities.
- Departures significantly outperform the Instrument Flight Procedure (IFP) climb gradient of the SID.

In response to these findings, the local communities are asking Heathrow to make these aircraft higher on departure; in essence raising the departure climb gradient.

Heathrow are aware that raising the climb gradient could have environmental and operational consequences.

For this reason, Heathrow propose an operational airspace trial to understand the impact of making such a change.

The Trial

Heathrow are trialling a steeper Standard Instrument Departure (SID) for runway 09R DET departures to understand the effect of the climb gradient on noise re-distribution as well as any operational effects on their airline customers and Air Traffic Control (ATC).

The trial SID will remain based on conventional navigation with no change to the lateral track over the ground. The steeper gradient will be realised by the addition of altitude attainment points at existing DME distances.

The gradient for the trial was chosen following preliminary analysis of 10 months' radar data of heavy departures¹ on the DET1J SID from runway 09R.

The proposed trial increases the SID gradient required between 1000ft and 4000ft from 4% to 5%. From 4th January 2018, all runway 09 DET departures will be issued with the steeper SID for the duration of the trial which will run for 12 months. That data will be compared to data for the previous 12th months (Jan - Dec 2017)

Heathrow have deployed an additional 11 Noise Monitoring Terminals (NMTs) to collect a baseline² against which to compare the steeper SID operations. This provides a total array of 20 NMTs in the vicinity of the SID track which will provide data for the trial analysis. The full array of 20 NMTs have been deployed and capturing data since 1st June 2017.

This interim presentation provides an overview of analysis of the first 8 months (1st Jan 2017 – 31st Aug 2017) of DET 1J baseline departure performance together with associated noise data (1st June - 30th Sept) to inform a detailed baseline against with the trial data will be assessed.

¹A340/A380/B747/B777

²Jun – 31st Dec 2017

Baseline (Pre-Trial) Data Analysis



Easterly Ops

35%

9816

DET1J Departures

117

Per Day (Avg)

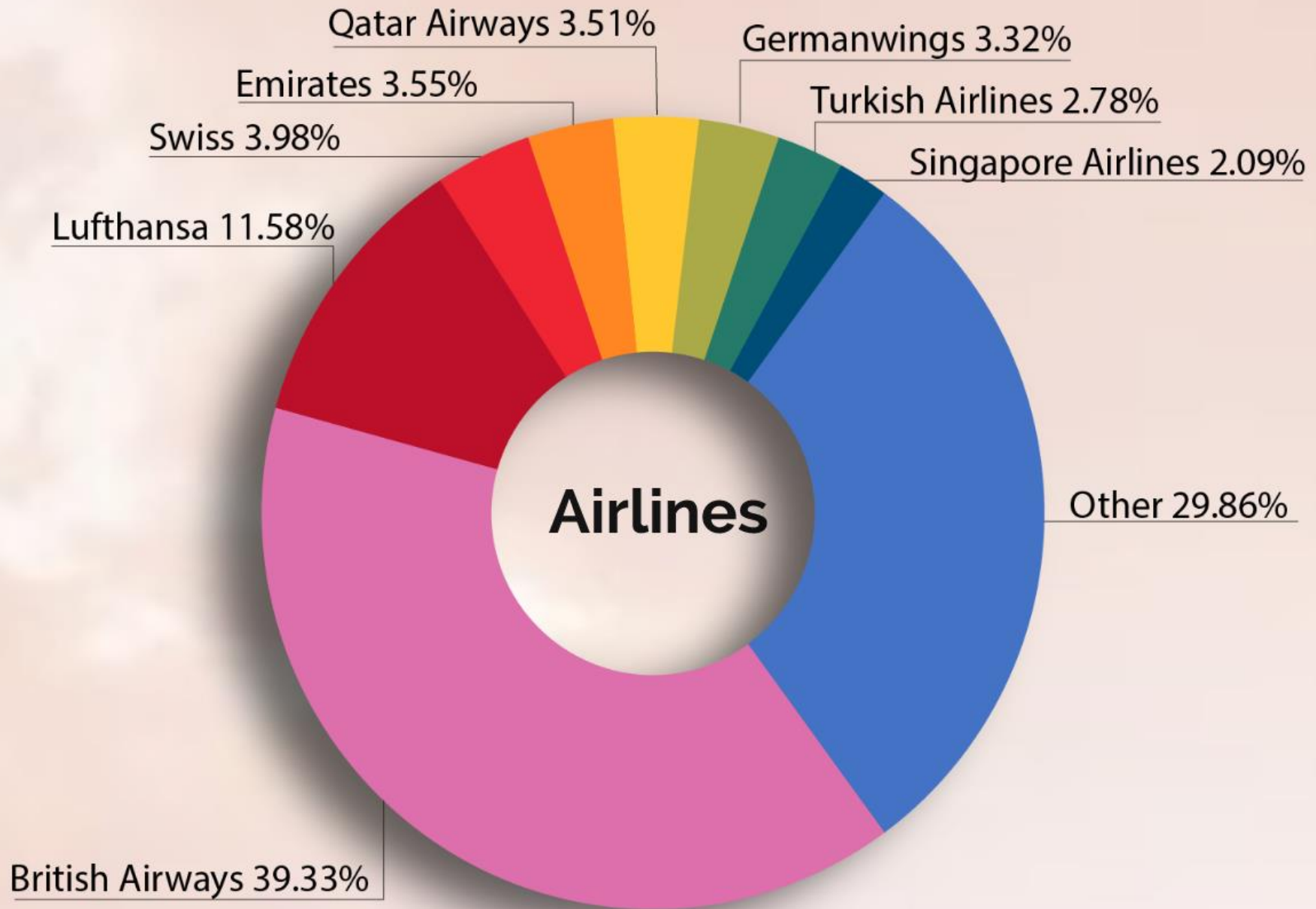
3999

Heavy/Superheavy
Departures



Destination by Region





Super Heavy

Airbus A380-800	10.16%
	10.16%

Heavy

Airbus A300-300	2.89%
Airbus A300-600F	0.57%
Airbus A330-200	1.58%
Airbus A340-200	0.02%
Airbus A340-500	0.05%
Airbus A340-600	0.10%
Airbus A350-900	1.62%
Boeing 747-400	1.96%
Boeing 747-400F	0.16%
Boeing 747-800F	0.08%
Boeing 767-300	1.97%
Boeing 777-200 / 777-200ER	6.18%
Boeing 777-200LR	0.14%
Boeing 777-300ER	8.99%
Boeing 777F	0.06%
Boeing 787-900	4.21%
	30.58%

Upper Medium

Boeing 757-200	0.12%
Boeing 757-200F	0.09%
	0.21%

Medium

Airbus A318	0.68%
Airbus A319	16.90%
Airbus A320	26.30%
Airbus A321	9.61%
Avro RJ100	0.03%
Bombardier CS100	0.04%
Boeing 737-700	0.06%
Boeing 737-800	0.66%
Boeing 737-900	0.01%
Boeing 787-800	4.27%
Boeing737-300	0.01%
Boeing737-800	0.07%
Bombardier CS300	0.02%
Bombardier Challenger 350	0.01%
Canadair Regional Jet 900	0.01%
Embraer E190	0.21%
Embraer E195	0.01%
Fokker 100	0.08%
Gulfstream G650	0.04%
	59.02%

Light

Beech Kingair	0.01%
Citation 650	0.01%
Gulfstream G280	0.01%
	0.03%

LON D4

MIN **1057ft**
MAX 4991ft
AVG 2283ft

Current SID: No height restriction.

Trial SID requires Min 1400ft here.

DET D34

MIN **2184ft**
MAX 5976ft
AVG 4003ft

Current SID: No height restriction.

Trial SID requires Min 2500ft here.

DET D29

MIN **3098ft**
MAX 5997ft
AVG 5564ft

Current SID: Min 3000ft

Trial SID requires Min 4000ft here.

• Hounslow

• Richmond

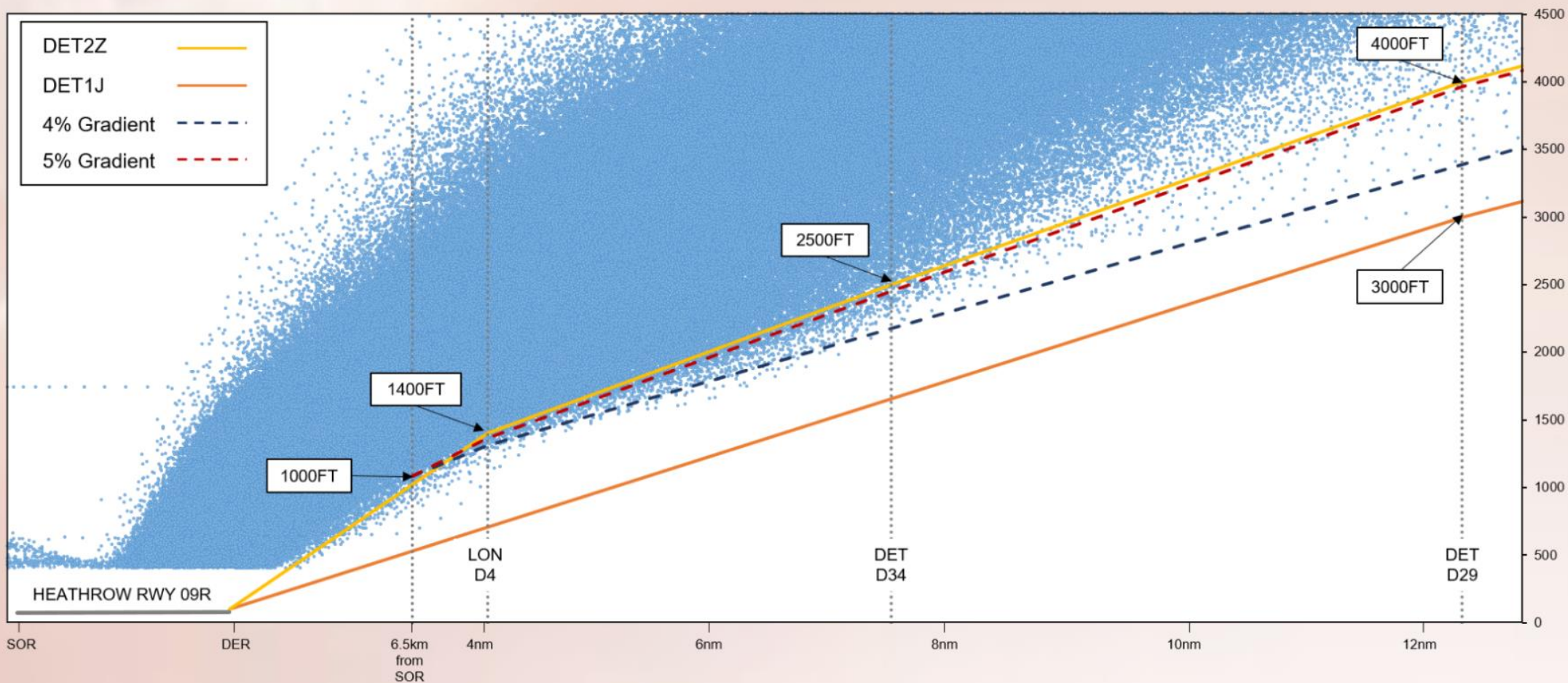
• Twickenham

• Teddington

• Mitcham

• Croydon

Aircraft Climb Performance 1st January 2017 - 31st August 2017



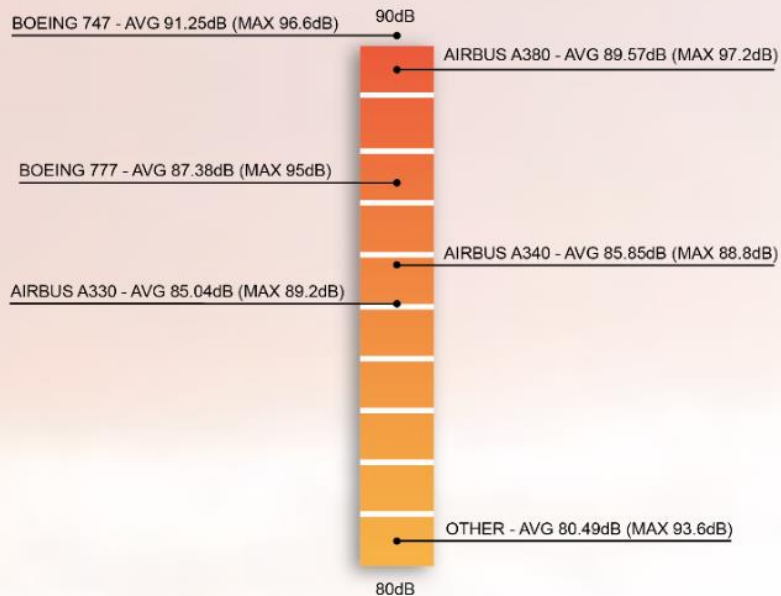
NMT Locations

	AVG	MAX
137 Green Man Lane	82.76	97.20
21 Hounslow Heath Golf Course	78.84	90.90
10 Hounslow Heath	77.28	91.70
139 Hanworth Road	76.27	88.60
140 Lincoln Road	74.55	87.70
13 Sparrow Farm Road	74.22	87.70
145 Whitton Church	72.79	87.60
12 Cavalry Barracks	72.68	87.00
20 Hounslow Cavalry Barracks North	72.52	86.40
11 Mink Court	71.77	82.90
136 Ham Church	71.75	81.10
132 Strawberry Hill House	71.09	83.80
138 SW Middlesex Crematorium	70.68	82.30
144 Fulwell Park	69.84	82.00
142 Richmond Park Central	68.92	82.70
141 Richmond Park North	68.80	87.90
143 Richmond Park South	67.89	81.20
146 Robin Hood School	67.80	80.30
129 Mogdens	64.48	75.30
133 NPL	63.96	71.40

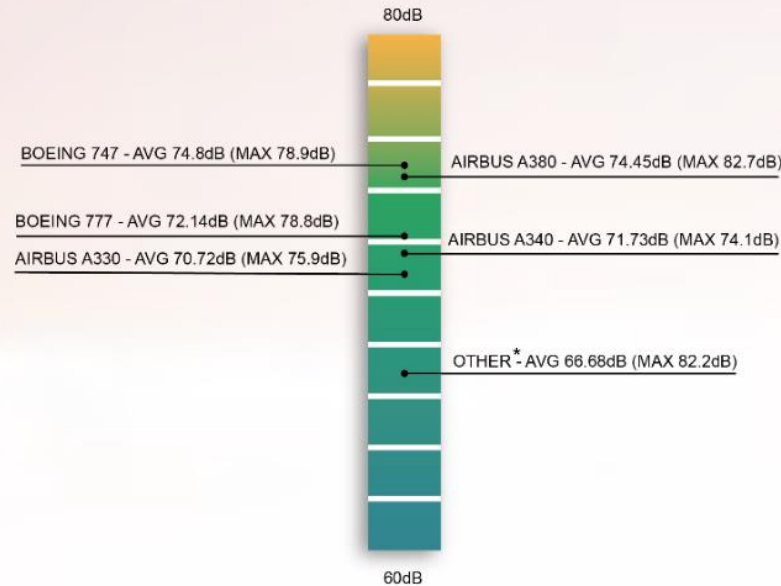
Note: Average is calculated using the Arithmetic Mean method.

Example Average/Max Noise (L_{Amax}) by Aircraft Type

Green Man Lane
3209 Noise Events (100%)



Richmond Park Central
2795 Noise Events (87.10%)



*OTHER AIRCRAFT TYPES

- Airbus A300-300
- Airbus A300-600F
- Airbus A318
- Airbus A319
- Airbus A320
- Airbus A321
- Airbus A350-900
- Boeing 737-300
- Boeing 737-700
- Boeing 737-800
- Boeing 757-200
- Boeing 757-200F
- Boeing 767-300
- Boeing 787-800
- Boeing 787-900
- Bombardier 500 C Series CS300
- Bombardier CS100
- Embraer E190
- Fokker 100

Note: Average is calculated using the Arithmetic Mean method.

Next Steps

Between 4th January 2018 and 3rd January 2019 all Runway 09R DET departures will be issued with the trial SID.

An interim trial presentation will be published in October 2018 to provide an initial summary of the analysis of aircraft performance flying the trial steeper SID between January and August 2018.