Low flights in and out of Heathrow cause extra noise

Teddington Action Group June 2021

Contents

Synopsis

Planes flying in and out of Heathrow fly at varying heights at the same geographical position. BA, the biggest user, flies aircraft considerably lower than many other airlines. This causes life changing extra noise for residents underneath. At one point (Datchet) the difference in noise under departing planes could be as much as 18 decibels according to the results from xPlane and the noise table provided by NATS.

Heathrow does not operate an ICAO noise abatement procedure for departures as set out in the ICAO guidance. The Aeronautical Information Publication does provide that aircraft shall at all times be operated in a manner which is calculated to cause the least disturbance practicable in areas surrounding the aerodrome. It is the opinion of the communities that this is not being followed. The communities consider that operating the ICAO NADP1 procedure in accordance with ICAO guidance up to 4,500’ on departure and continuous descents upon arrival would a give very substantial noise reduction, and wish for these measures to be introduced at the earliest opportunity

It is vital that the communities surrounding Heathrow have access to independent expert advice on the effects of aircraft operations. This is evidenced by the inaccurate information given by the industry, with specific examples from the CAA and BA, and the effective verification by To70 of the statements made for many years by the communities affected

Low flying aircraft cause increased noise and suffering to communities affected by the airport

This paper is about the low rates of climb of departing aircraft as well as the shallow approaches into Heathrow and the needless suffering from increased noise that this brings upon communities around Heathrow. In our view Heathrow should manage its operations to cause as little suffering and hurt to people affected as it reasonably can. We say that it is failing in this respect. Representatives of communities affected by Heathrow's operations have been talking to Heathrow through the Heathrow Community Noise Forum (HCNF) for some 6 years now with correspondence going back to November 2014.

Heathrow does not operate any ICAO listed noise abatement procedure on departure. It has its own procedure in the Aeronautical Information Publication. Essentially, the obligation is for departing flights to attain 1,000' by 6.5 kilometres from start of roll and thereafter to climb at a rate of no less than 4% up to 4,000'. There is an overriding duty in paragraph 12 that

> *"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".*

Communities around Heathrow are of the view that some airlines (most notably BA which is the biggest user of Heathrow) fail to comply with their least disturbance duty in this respect

For arrivals, the Aeronautical Information Publication says

> *" 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."* [para. 9 section 2.21]

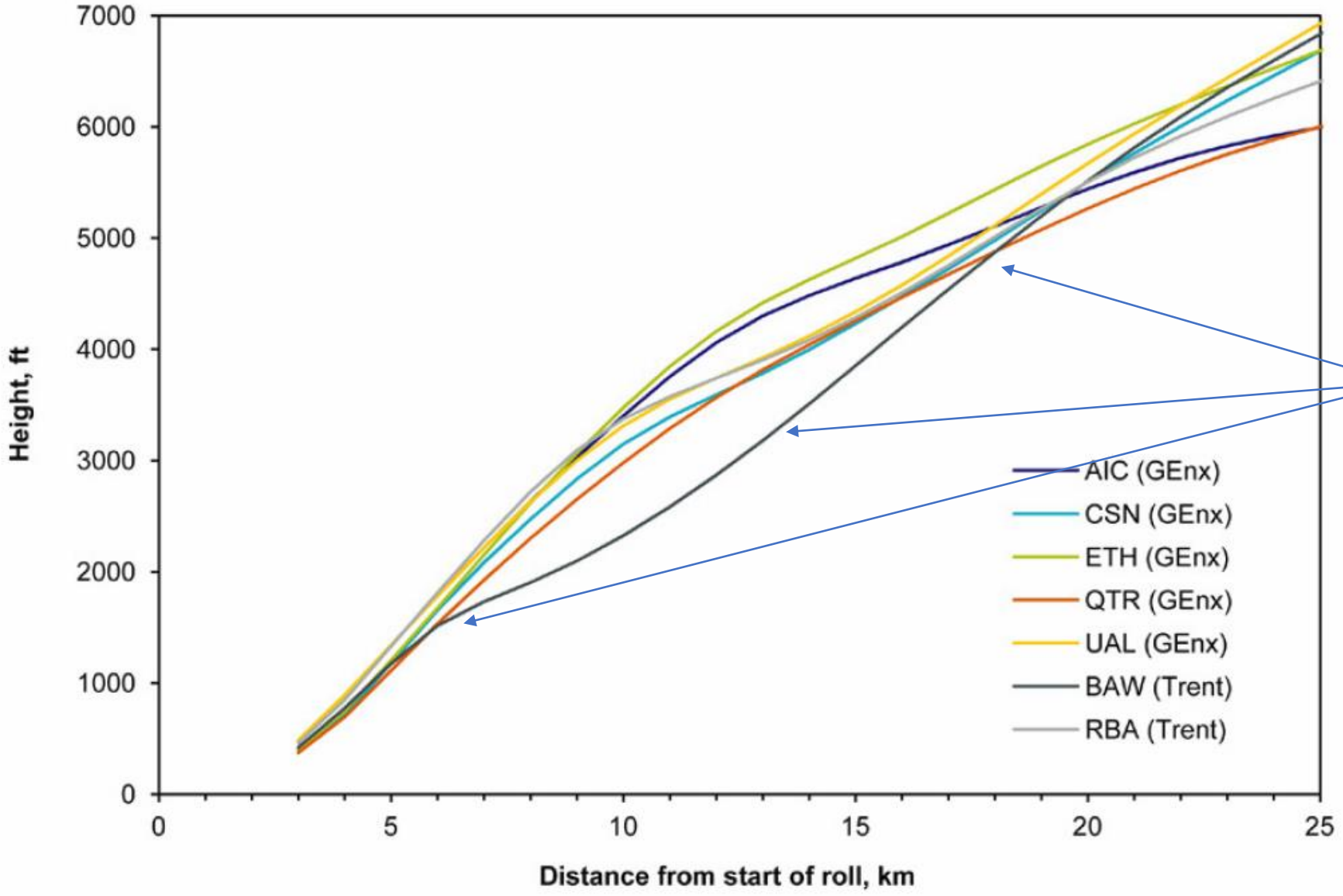
Very few people under the inward flight path being woken relentlessly at 4.30am would agree that this procedure is being followed!

CAP1191 on airline departure profiles for the B787

An example of a slow rate of climb:

The CAA in their report CAP1191 give the climbing profiles for the then new Boeing 787. It can be seen below that the BA rate of climb for the B 787 is substantially lower than all other airlines up to 18 kilometres (9.7 nautical miles) from start of roll.

Figure 9 Comparison of average 787 departure height profiles by airline



BA is the lowest all the way from 5.5kms from start of roll to 18kms

Departures

NADP1

versus

NADP2

Departures

There are two internationally recognised noise abatement departure profiles – NADP (Noise Abatement Departure Procedure) 1 and NADP2. NADP1 is intended to provide noise reduction for noise sensitive areas in close proximity (up to 12.5 miles/20 kilometres) to the departure end of the runway. NADP2 provides noise reduction to areas more distant from the runway end (over 20km/12.5m). These are set out in the ICAO document 8168

Briefly, the procedures are:

For both procedures the manufacturer's recommendation for take-off is observed to 800'. There is no noise abatement under this height in either ICAO procedure. For both NADP1 and 2 there is then a power reduction at no lower than 800' if the aircraft are at high thrust.

NADP1: flaps are left in the down position so that the plane has the maximum amount of lift. The energy from the engines is concentrated on the lift as soon as possible after take-off. The aircraft gains height as soon as possible. At the appropriate time, the flaps are retracted and the plane accelerates to en route speed.

NADP2: the flaps are retracted at no less than 800' and then the plane accelerates but undergoes a slower climb before transition to normal en route speed.

Height reduces noise on the ground

Height reduces the noise dramatically. The further away is the noise source, the lower will be the effect upon the recipients. It is obvious, but NATS and the CAA produced a helpful noise table shown below, as appendix J of their London airspace consultation of 2013, showing the amount of noise reduction expected with increased height.

NATS

London Airspace Consultation
Appendix J
Standard Tables of Aircraft Noise Impact

Table 3: Departure L_{max} levels by aircraft grouping

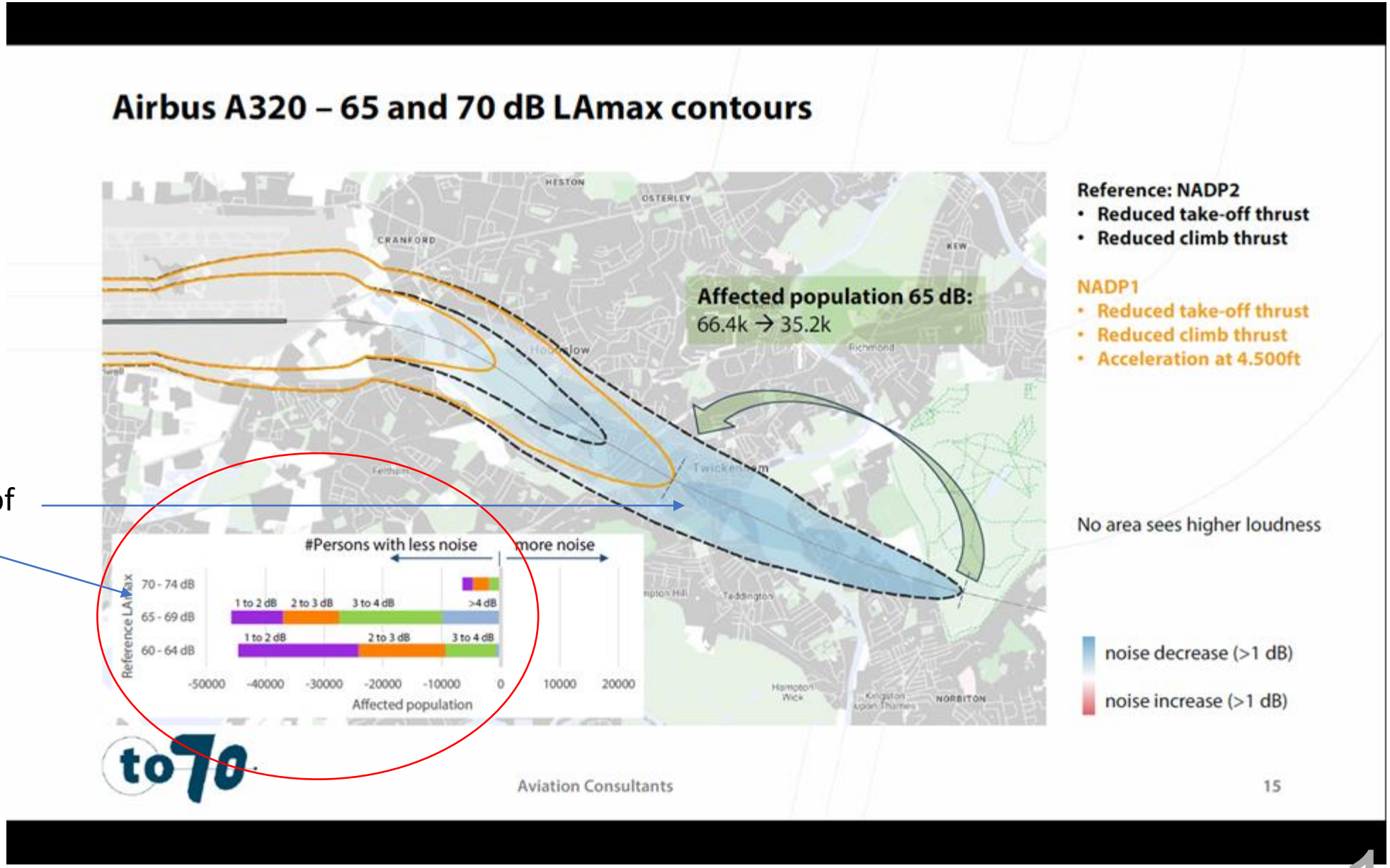
Height (ft)	Turbo-prop	50 seat regional jet	70-90 seat regional jet	125-180 seat single-aisle 2-eng jet	250 seat twin-aisle 2-eng jet	300-350 seat twin-aisle jet	400 seat 4-eng jet	500 seat 4-eng jet
1000-2000	78-71	78-70	85-75	85-75	92-83	90-81	92-84	91-84
2000-3000	71-67	70-65	75-68	75-70	83-77	81-75	84-79	84-80
3000-4000	67-64	65-60	68-64	70-66	77-73	75-71	79-75	80-76
4000-5000	64-62	60-57	64-61	66-63	73-69	71-67	75-72	76-73
5000-6000	62-60	57-55	61-58	63-60	69-66	67-64	72-69	73-71
6000-7000	60-58		58-56	60-59	66-64	64-62	69-67	71-68
7000-8000	58-56		56-56	59-58	64-61	62-60	67-64	68-66
8000-9000	56-56		56-55	58-57	61-59	60-58	64-62	66-65
9000-10000	56-55			57-56	59-58	58-57	62-60	65-63
10000-11000				56-56	58-57	57-56	60-60	63-62
11000-12000				56-56	57-56	56-55	60-59	62-60
12000-13000				56-55	56-56		59-58	60-59
13000-14000					56-55		58-58	59-58
14000-15000							58-57	58-55

Height reduces noise on the ground

You can see highlighted on the table above that with a relatively large 250 seat twin engine aircraft the difference between 3,000’ and 4,000’ is 4 decibels. Getting to 5,000’ as opposed to 3,000’ the difference in LAmax is suggested to be 8 dB LAmax – a very substantial noise reduction

The CAA has produced a paper on continuous climbs and the noise reduction. Now the community noise groups have got the help of aviation noise experts, To70. To70 has presented a paper to the HCNF. In that paper they set out the substantial benefits in using the NADP1 procedure at Heathrow. Unhappily the funding for To70 has been withdrawn by Heathrow. It is absolutely imperative that it is restored at the earliest opportunity, since without access to proper professional advice of their own, the communities affected by Heathrow operations will not get the necessary information to protect either their own interests and wellbeing but also the interest of the environment

Population benefitting from reduced loudness of aircraft noise



The above diagram shows the dramatically reduced exposure to noise for the vast majority of affected residents by using the steeper climbs.

You would think that this would be a no brainer. Why deliberately inflict increased noise upon people under the flight path? This is nothing new. We have been trying to get action on this since 2014!

Response of BA to To70

BA, which is one of the worst airlines for low flying, on the presentation of To70, responded not with any great (or hoped for) enthusiasm or demonstration to improve, but rather what appears to be stonewalling. According to the HCNF minutes BA's response to To70 is as follows:

5.3 Spencer Norton (SN) thanked KV for the presentation and raised a number of questions (via meeting chat). He noted that the study only looked at the DET route on runway 09R and suggested that as 09R is only used for 30% of the year 27L/R would have been more suitable. In addition, he would like to see who was adversely affected by NADP1 compared to NADP2, noting that there would be winners and losers and that NADP1 was not a silver bullet. He advised that full thrust take-off as mandated was not done anywhere in the world and would not be tolerated by any airline, so he suggested this data should be omitted from the study. He also added that a tapered derated climb affects climb rates higher up, so that should also be discounted. He observed that an acceleration above 3,000ft is not usual for NADP1 and that as the NPRs are only valid up to 4,000ft this would cause issues. He also noted the absence of any carbon disbenefits in the presentation which he expected would be large.

Taken from H.C.N.F. minutes of 27th January 2021

On the points that BA have raised, we in the communities surrounding respond as follows:

BA response.
Argument 1

Only one flight path studied

1. BA saying that the study was only on one flight path:

BA only have to talk to the people on the ground all around Heathrow to find out that low flying causes a huge increase in noise. If BA think otherwise then why? What evidence do they have? They and Heathrow are the operators. Why have they not produced this evidence considering this has been discussed since 2014? Why do the ICAO recommend this procedure in their Guidance? Why do airports in other countries adopt this procedure?

The xPlane results (shown below) show a similar trait on flight paths in both an easterly and westerly direction of flight paths

BA response.
Argument 2

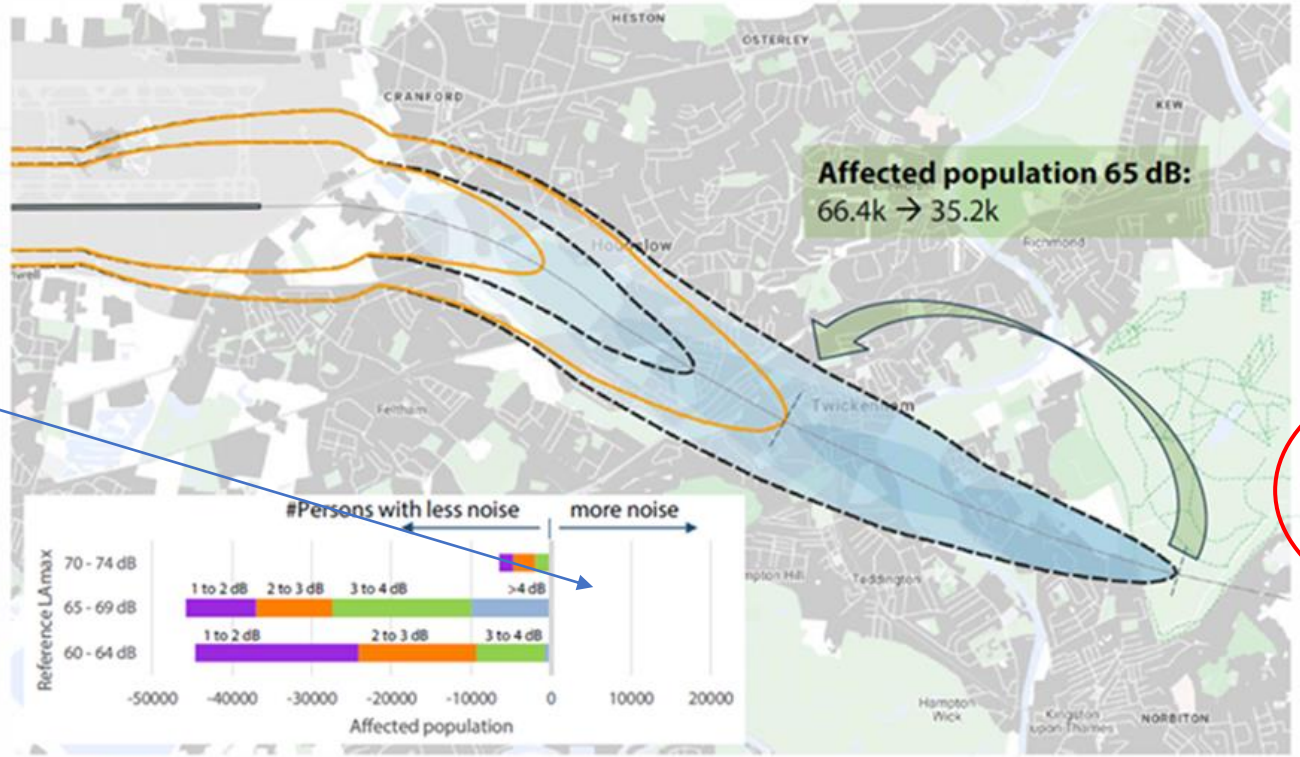
Who will be adversely affected?

2. BA would like to see who was adversely affected by NADP1. On reading the To70 paper BA will see that the answer is no one! There will be no “winners and losers” as BA say – only winners. If Heathrow and/or BA think that there are losers, who are these losers and how much do they lose? Heathrow and BA have had since 2014 to find out. The reduction in thrust is operated with both procedures. The report of To70 shows that not only is the Lmax noise reduced but so is the overall “dosage” under the SEL metric. Lmax is the maximum amount of noise. The SEL also includes the duration of the noise event. From the diagrams below if can be seen that there are no people experiencing increased loudness and there are substantial reductions in noise in all the noise bands Similarly under the SEL (Sound Exposure Level) metric there is no one suffering more noise over the entire noise event. There simply are no losers.

LAmax

No increase in noise (loudness) anywhere

Airbus A320 – 65 and 70 dB LAmax contours



Reference: NADP2
- **Reduced take-off thrust**
- **Reduced climb thrust**

NADP1
- **Reduced take-off thrust**
- **Reduced climb thrust**
- **Acceleration at 4.500ft**

No area sees higher loudness

noise decrease (>1 dB)

noise increase (>1 dB)

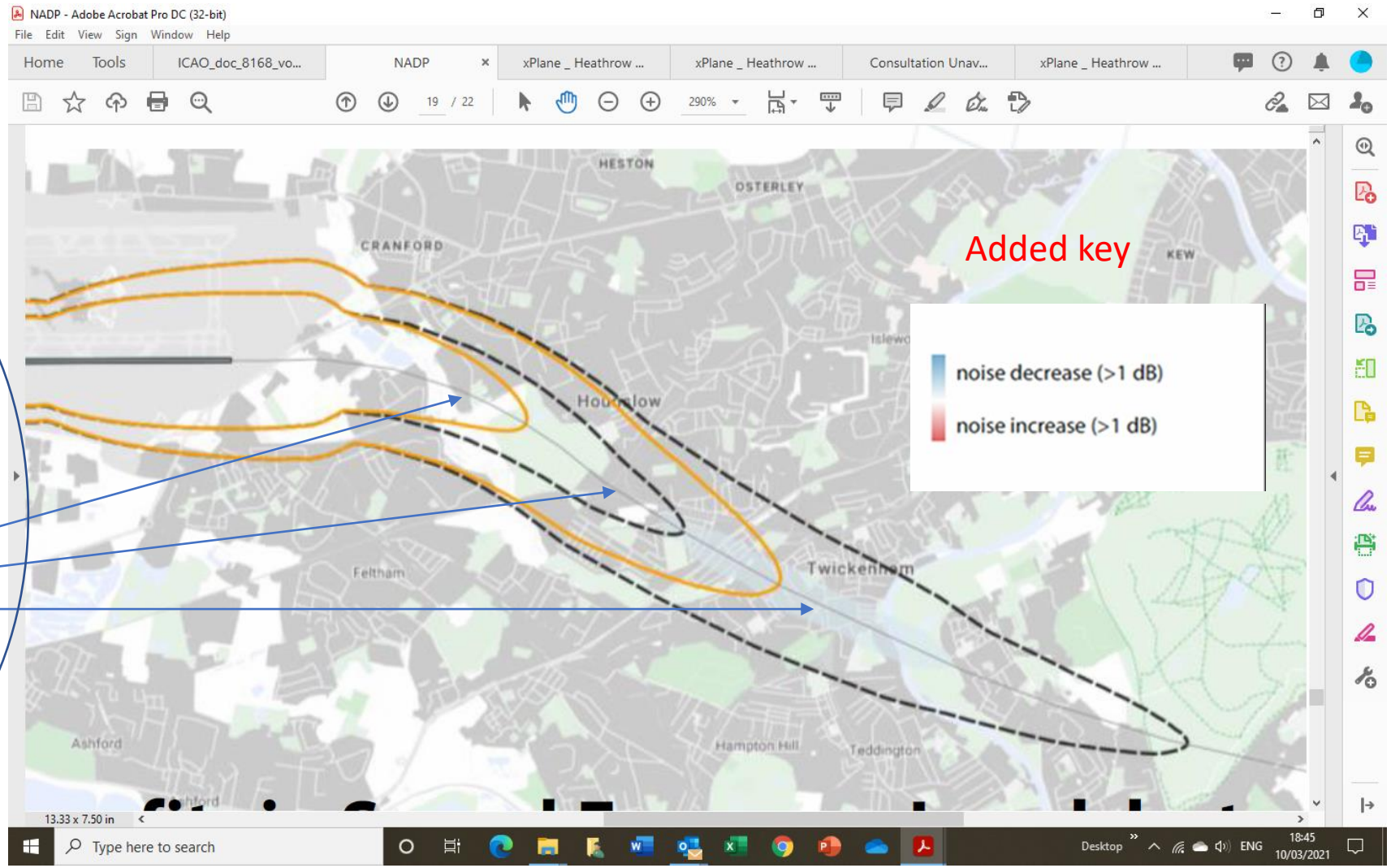
to70

Aviation Consultants

15

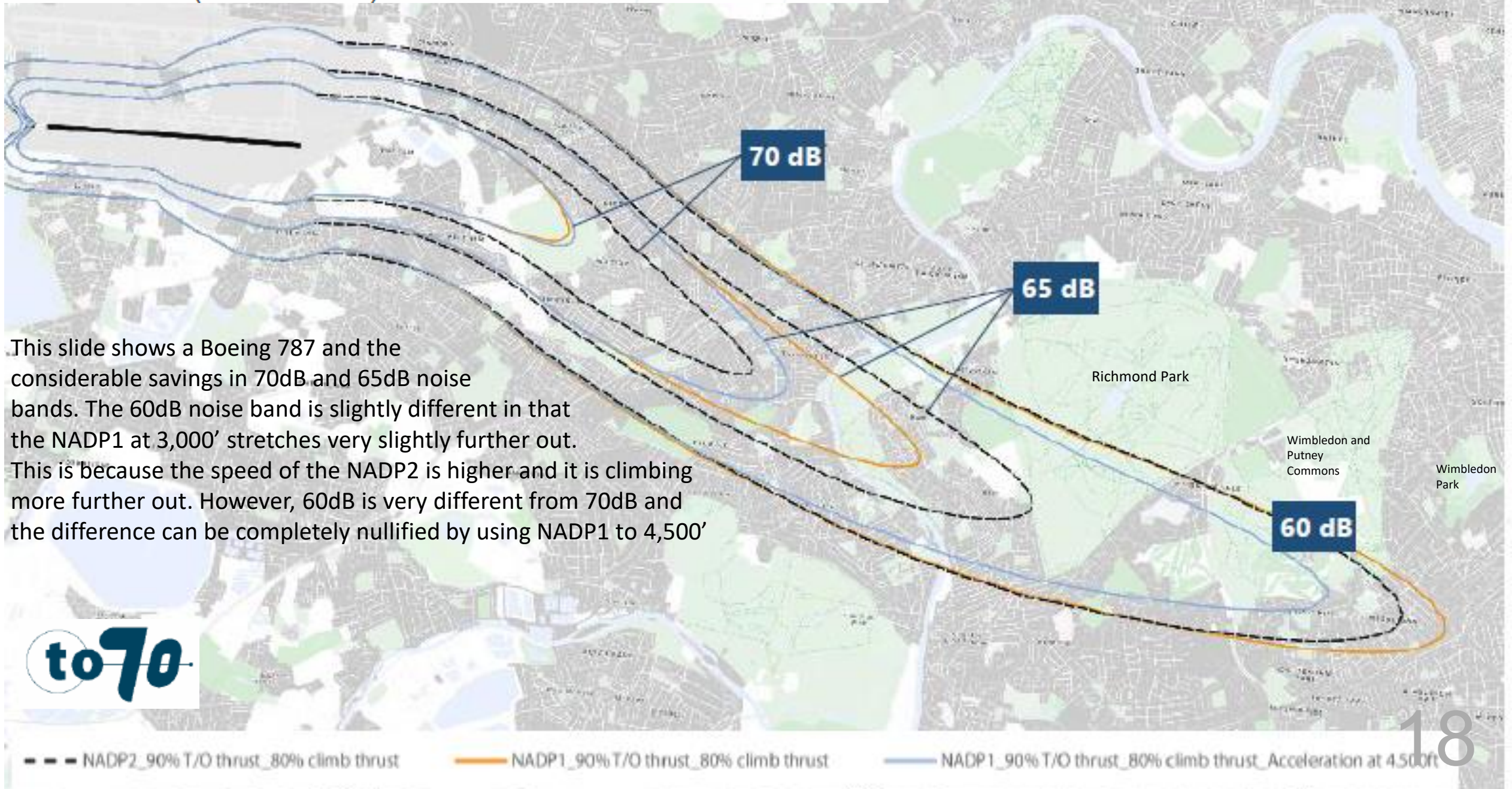
SEL (Sound Exposure Level) to include duration of noise exposure

Sound exposure levels, including the duration of noise exposure, show a decrease in noise in the centre line. No red colouring shows no increase in noise exposure elsewhere



Boeing 787-8 – 60, 65 and 70 dB LAmax contours

Distance Class 5 (2500-3000nm)



This slide shows a Boeing 787 and the considerable savings in 70dB and 65dB noise bands. The 60dB noise band is slightly different in that the NADP1 at 3,000' stretches very slightly further out. This is because the speed of the NADP2 is higher and it is climbing more further out. However, 60dB is very different from 70dB and the difference can be completely nullified by using NADP1 to 4,500'

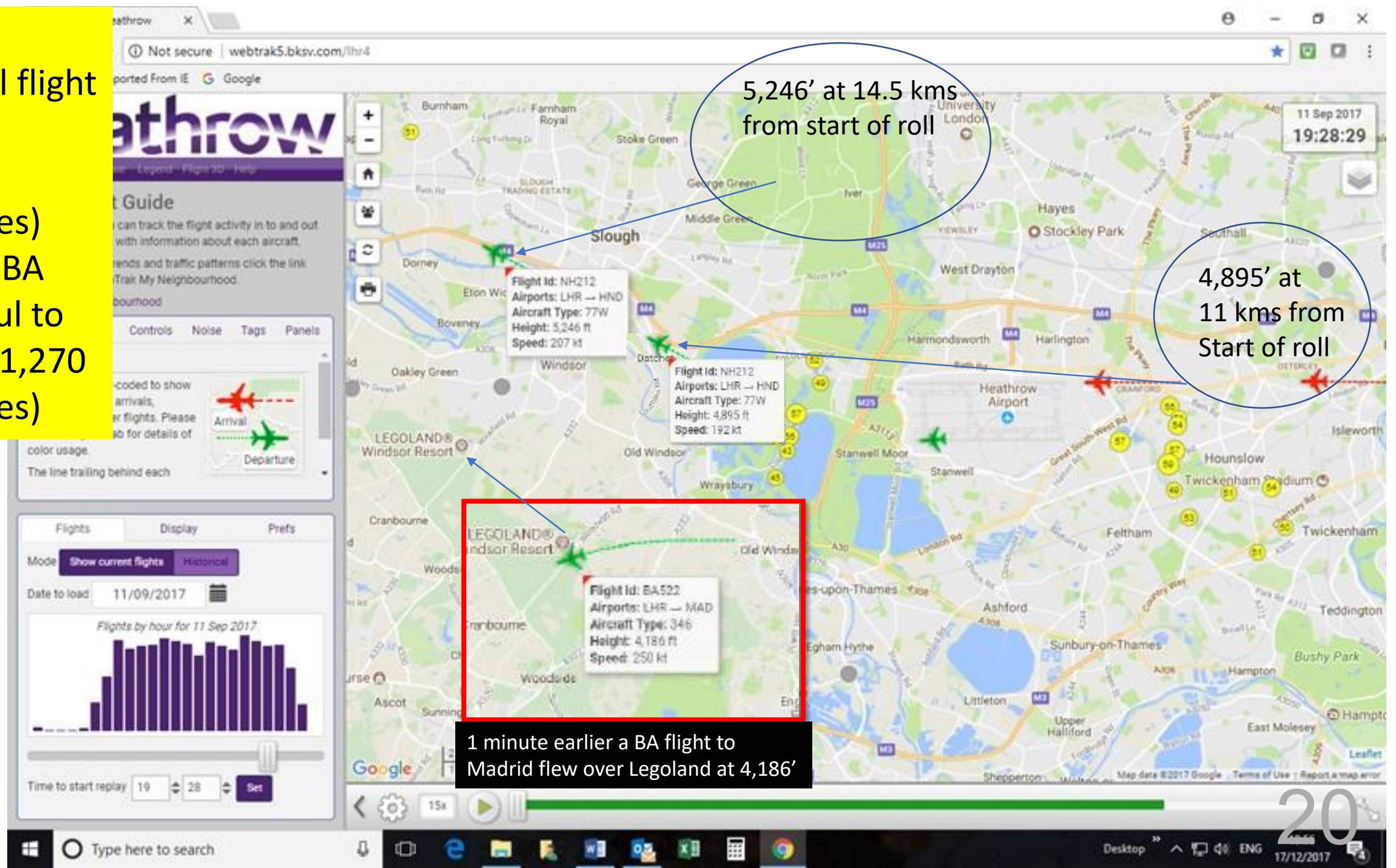
BA response.
Argument 3

Acceleration above 3,000’ not usual

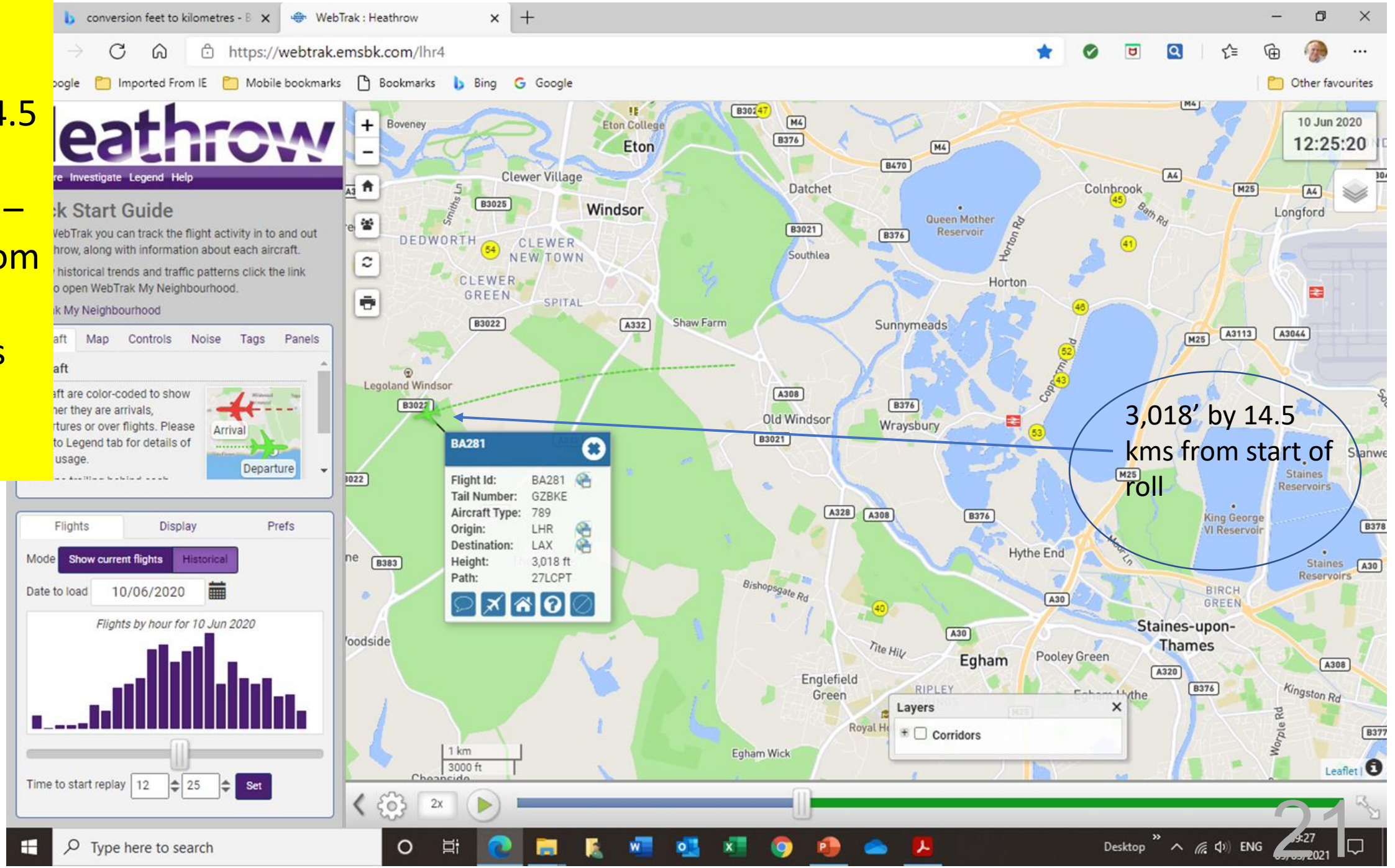
3. BA “observe that an acceleration above 3,000’ is not usual for NADP1”. It may not be usual for BA but other airlines do operate a steep climb at Heathrow (quite often foreign airlines which operate steep climbs at home). Thus we have an ANA long haul to Tokyo on the 11th September 2017 reaching over 4,500’ by the time that many BA long haul planes only reach less than half that. Just one minute earlier a BA short haul plane to Madrid took over 14 kilometres to get to just 4,200’. The ANA long haul had got to over 5,200’ by then. Quite often BA planes do not get to more than 3,000’ by 14 kilometres from start of roll

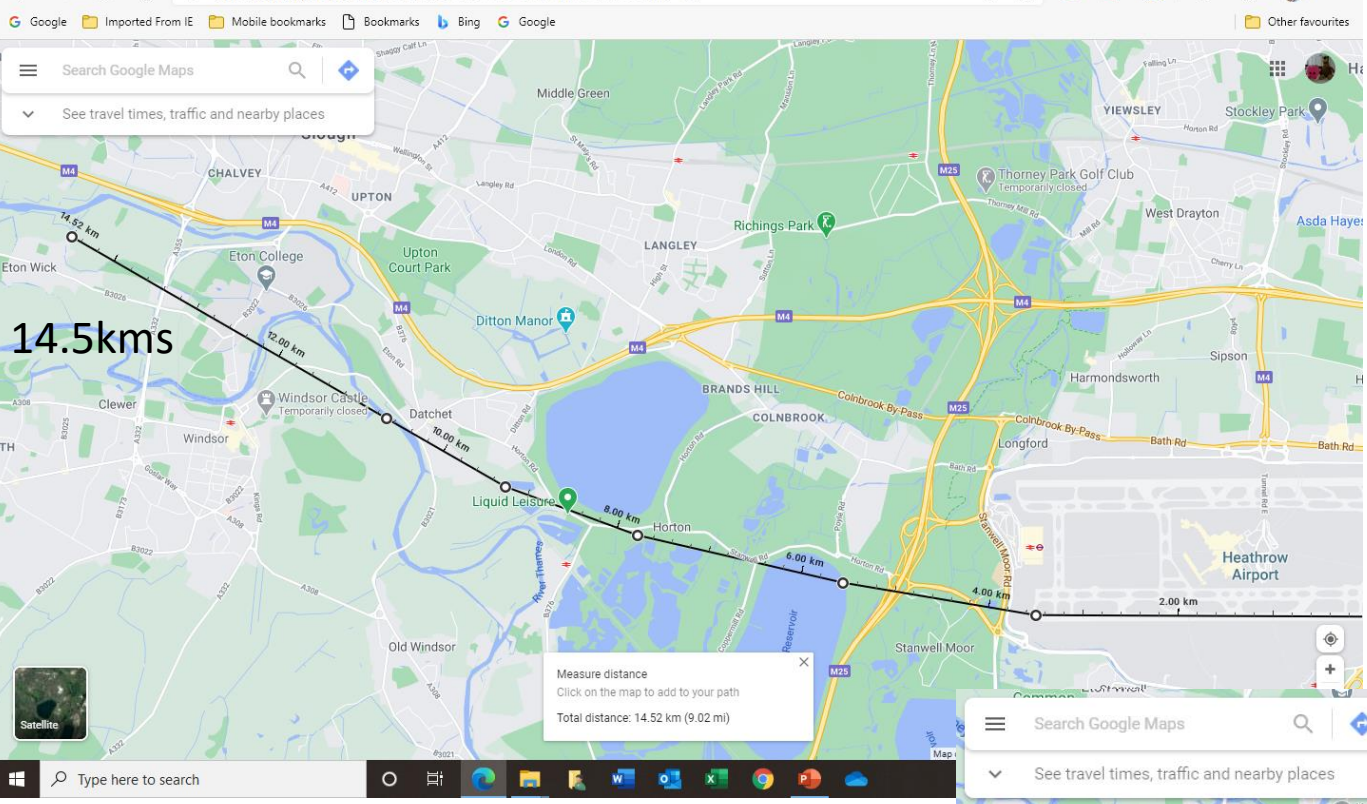
We see the diagrams and results below:

ANA
long haul flight to Tokyo (9,600 kilometres) comp to BA short haul to Madrid (1,270 kilometres)

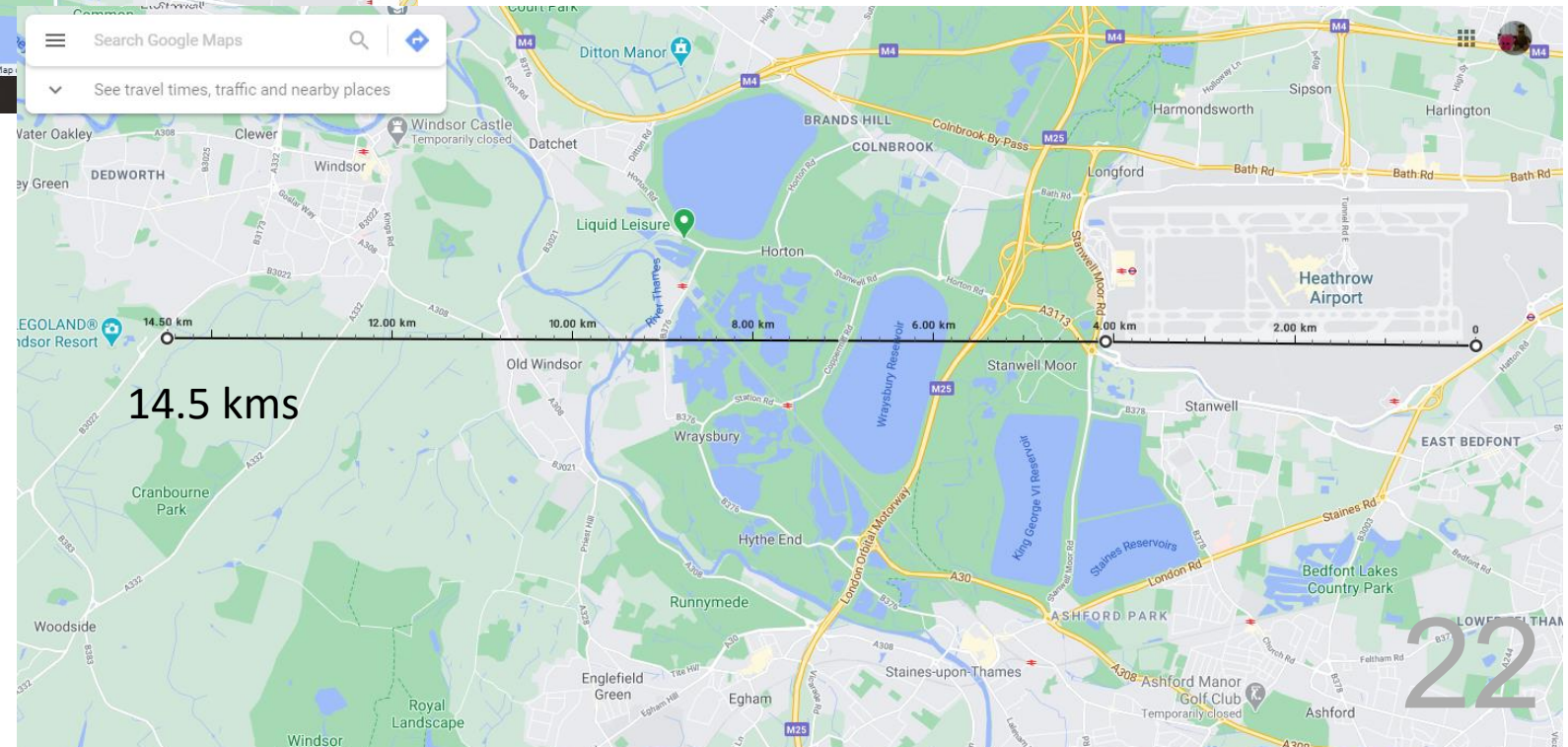


Compare with BA at 3,018’ at 14.5 kms from start of roll – BA flight from London to Los Angeles (8,800 kilometres)





Distances from start of roll up to 14.5 kilometres on the above two routes shown on Google Maps



xPlane

In the next slide we see from the records of xPlane that over a randomly selected pre-pandemic period of 7 days in March 2019, the huge differences in height, between 2,500’ and 5,000’+ of long haul planes over Eton Wick (14.5kms from start of roll). BA are the lowest at 2,546’. One of the most striking things about this xPlane report is the vast difference in heights achieved by different airlines with similar aircraft even still close to the airport

This replicates the CAA findings on the departure profiles of the B 787 shown above

Heights at Eton Wick for week starting 16th March 2019. Heavy aircraft in dark with highest at 5,758’

Highest heavy plane is two and a quarter times higher than the lowest

Planes arranged by category with black as heavy

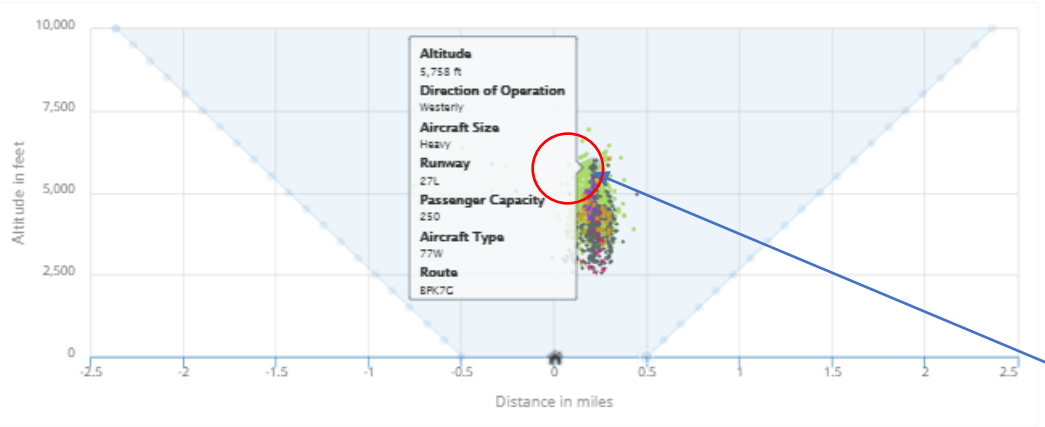
Gate Penetrations

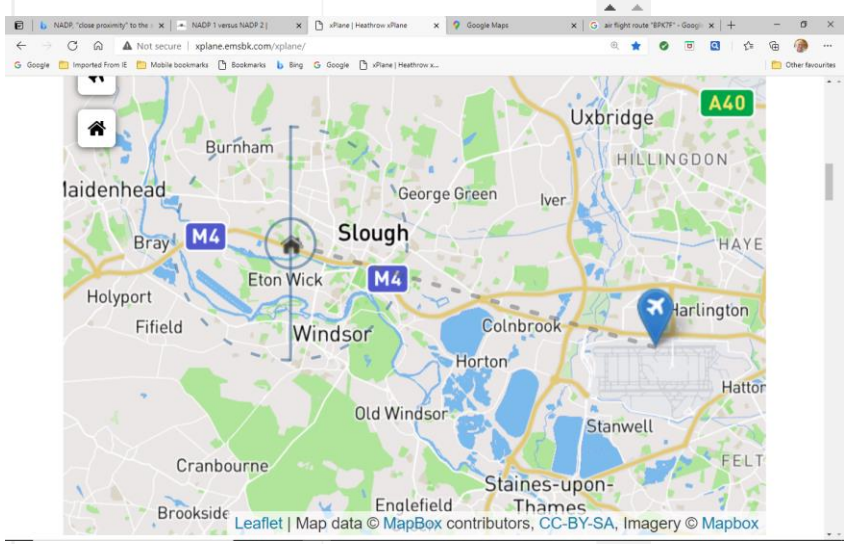
The Gate is a vertical slice through the home zone that allows you to see how Heathrow flights are distributed as they pass through the gate. Using the control below you can change the angle of the gate around the location.

Each marker on the chart represents an aircraft passing through the gate. You can see their altitude and distance from the location. You can select how the markers are coloured to get more insight into the flights near the location. You can zoom in by holding down the left mouse button and dragging the mouse over the area you want to zoom on.

Medium 1128 | Heavy 463 | Unknown 30 | Light 20 | Super Heavy 16

Operation Type | Runway | Route | Aircraft Size | Period of Day | Aircraft Type





Highest heavy plane at 5,758’

Aircraft Type | Airline

AIRLINE	TIMES THROUGH GATE	AVERAGE PASSENGER CAPACITY	MINIMUM ALTITUDE (FEET)
BAW	883	186	2,546
SAS	121	175	3,743
KLM	70	140	2,822
EWG	60	159	3,435
BEE	44	78	3,461
EIN	43	174	3,589
AAL	38	268	3,478
VIR	35	268	2,871
FIN	35	190	3,586
Others	328	268	2,707

BA the lowest at 2,546’

At Datchet, nearer in than Eton Wick, (11kms from start of roll), there is an even wider discrepancy. The next slide shows the lowest BA flight at 1,237', with Virgin at 1,184' being the lowest, and the highest heavy aircraft at 4,428'.

Under the NATS Appendix J chart the highest plane will be some 18 decibels Lmax less loud on the ground than the lowest plane (90 dB less 72 dB = 18 dB Lmax – see chart extract below on this page)

Living underneath the flight path, the difference between the two is quite simply enormous – life changing in fact!

Up to an 18 decibel saving by planes flying higher

NATS extract

London Airspace Consultation
Appendix J
Standard Tables of Aircraft Noise Impact

Height (ft)	250 seat twin-aisle 2-eng jet
1000-2000	92-83
2000-3000	83-77
3000-4000	77-73
4000-5000	73-69

Planes at Datchet with highest Heavy at 4,428’. Lowest at 1,184’ and lowest BA at 1,237’

Highest heavy plane is over three and a half times higher than lowest

Planes arranged by category with green as heavy

7 days starting 24th March 2019

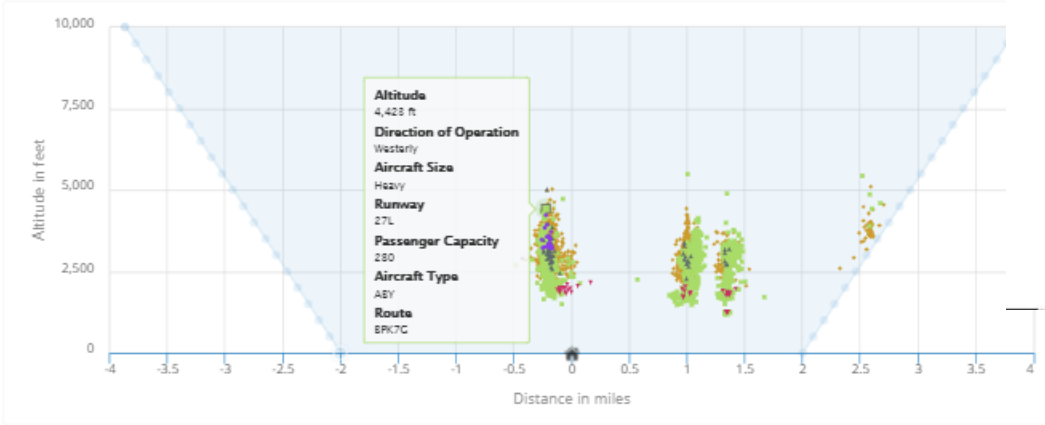
Gate Penetrations

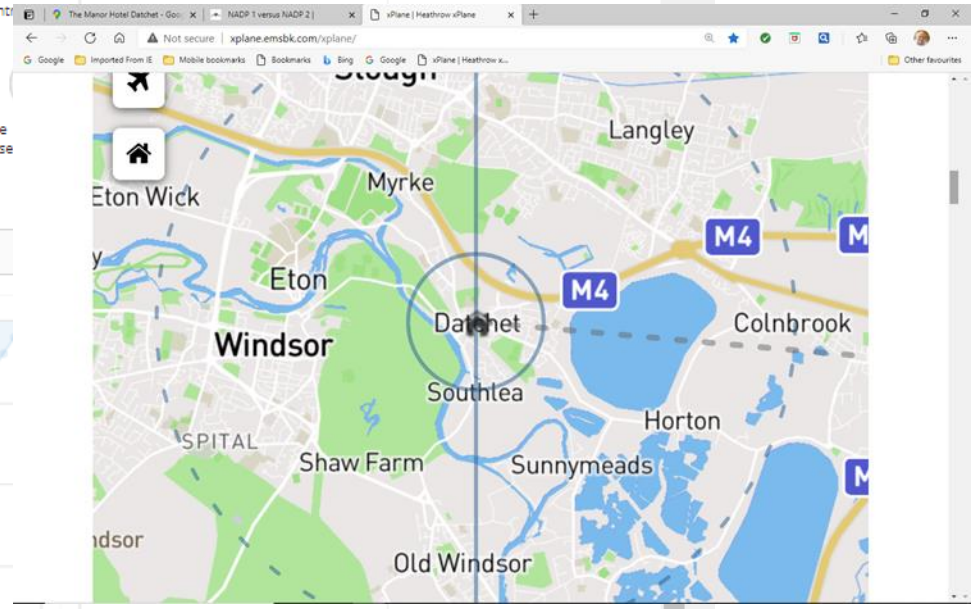
The Gate is a vertical slice through the home zone that allows you to see how Heathrow flights are distributed as they pass through the gate. Using the cont
below you can change the angle of the gate around the location.

Each marker on the chart represents an aircraft passing through the gate. You can see their altitude and distance from the location. You can select how the markers are coloured to get more insight into the flights near the location. You can zoom in by holding down the left mouse button and dragging the mouse the area you want to zoom on.

Medium 1815 Heavy 1137 Unknown 58 Super Heavy 34 Light 21

Operation Type | Runway | Route | Aircraft Size | Period of Day | Aircraft Type





Aircraft Type | Airline

AIRLINE	TIMES THROUGH GATE	AVERAGE PASSENGER CAPACITY	MINIMUM ALTITUDE (FEET)
BAW	1,572	199	1,237
EIN	149	174	2,461
VIR	135	283	1,184
AAL	128	272	2,280
SAS	121	173	2,356
UAL	112	234	1,237
KLM	70	142	2,300
EWG	64	161	2,549
DAL	56	239	2,854
Others	658	244	1,188

Similarly on easterlies, we see at Teddington the discrepancy between best and worst aircraft

UAE the worst at 1,624’, but BA nearly the worst at just 1,831’

The highest was at 4,344’ (over two and a half times higher than the lowest).

Heavy and super heavy planes over Teddington on the Dover Route. Highest at 4,344'. Lowest at 1,624' with lowest BA at 1,831'

Highest heavy plane is over two and a half times higher than lowest

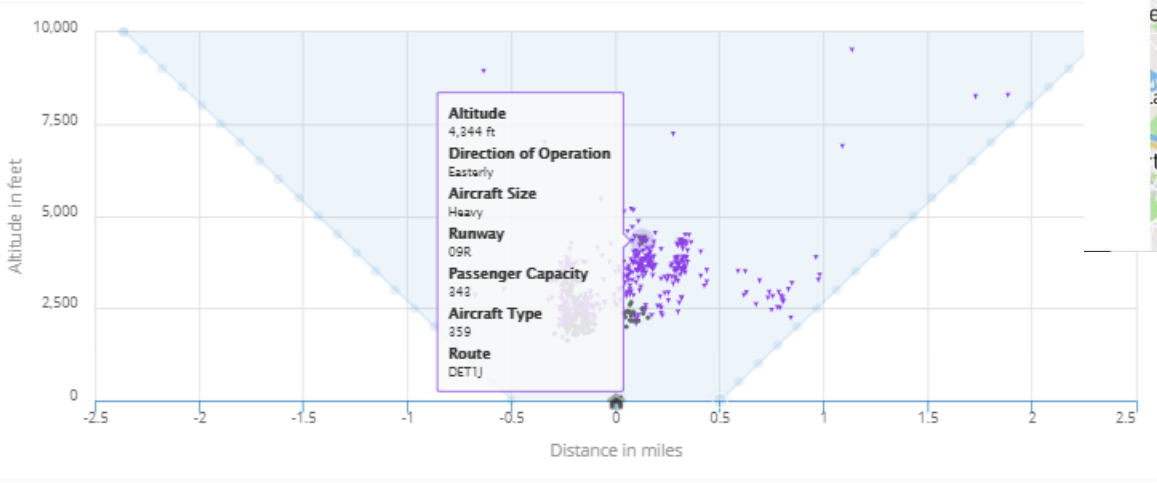
7 days from 5th April 2019

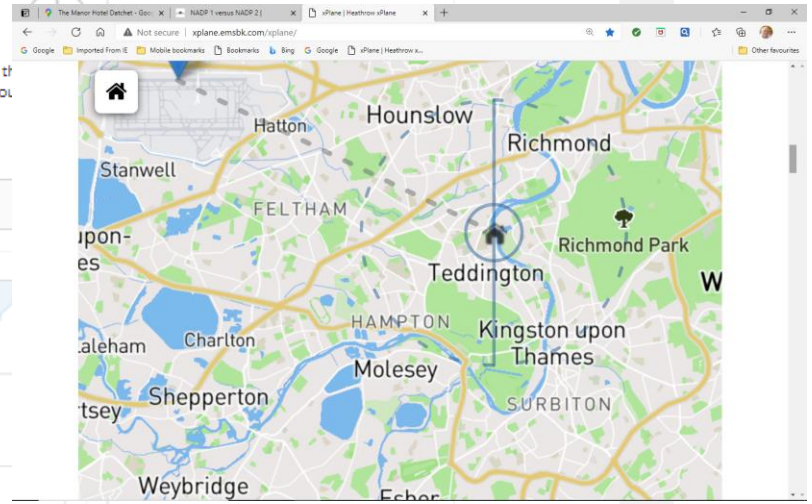
below you can change the angle of the gate around the location.

Each marker on the chart represents an aircraft passing through the gate. You can see their altitude and distance from the location. You can select how th
markers are coloured to get more insight into the flights near the location. You can zoom in by holding down the left mouse button and dragging the mou
the area you want to zoom on.

Heavy 434 Super Heavy 111

Operation Type | Runway | Route | Aircraft Size | Period of Day | Aircraft Type





Difference in noise between the highest and the lowest up to 15 decibels

Aircraft Type | Airline

AIRLINE	TIMES THROUGH GATE	AVERAGE PASSENGER CAPACITY	MINIMUM ALTITUDE (FEET)
BAW	159	255	1,831
UAE	43	516	1,624
SIA	28	380	2,001
QTR	27	418	1,873
ETD	27	455	1,788
AIC	26	279	3,199
JAI	21	350	3,350
THY	21	338	2,874
THA	14	427	2,241

NATS

London Airspace Consultation
Appendix J
Standard Tables of Aircraft Noise Impact

Height (ft)	250 seat twin-aisle 2-eng jet
1000-2000	92-83
2000-3000	83-77
3000-4000	77-73
4000-5000	73-69

BA Response.

Argument 4:

“the carbon disbenefits would be large”

4. BA’s expectation that “the carbon disbenefits would be large”……..

They will not be large! The To70 report shows that extra fuel burn is shown by To70 to be almost nothing – just 0.5%. That is also supported by the CAA in their report CAP1165 (see below). That will be tiny compared to the extra fuel burn incurred by the additional weight of tankering fuel by some airlines including BA – see example at (and below)

https://www.bbc.co.uk/news/science-environment-50365362

Climate change: British Airways reviews 'fuel-tankering' over climate concerns

By Justin Rowlatt
Chief environment correspondent

11 November 2019

Climate change

British Airways has launched a review into a money-saving practice which increases its greenhouse gas emissions.

It follows a BBC investigation exposing "fuel tankering" by airlines - in which planes are filled with extra fuel, usually to avoid paying higher prices for refuelling at destination airports.

The industry-wide practice could mean extra annual emissions equivalent to those of a large European town.

BA now says that using tankering to cut costs "may be the wrong thing to do".

However, the airline added that it also uses the practice for safety and operational reasons, including helping planes to turn around quickly.

BBC Panorama has discovered the airline's planes generated an extra 18,000 tonnes of carbon dioxide last year through fuel tankering.

Cost savings made on a single flight can be as small as just over £10 - though savings can run to hundreds of pounds.

Researchers have estimated that one in five of all European airlines' flights involves some element of fuel tankering.

The practice on European routes could result in additional annual greenhouse gas emissions equivalent to that produced by a town of 100,000 people.

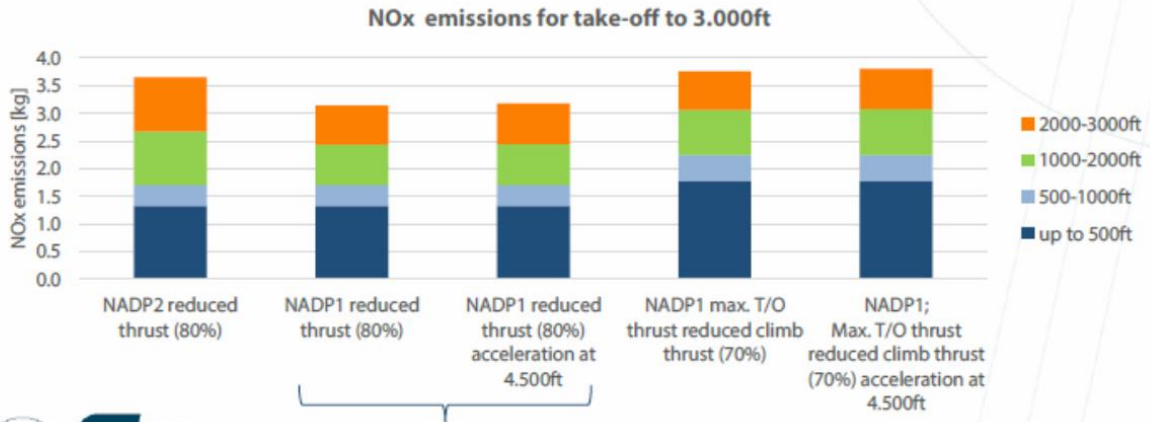
Additional fuel burn for NADP1 over 2 = just 0.5%. The proportion as a percentage of the total flight would be even less with a long haul flight where the proportion of take-off time to the total flight time is lower

Fuel burn and NOx

Additional fuel burn and NOx increase per flight with NADP1 and reduced thrust settings.

Fuel burn	NADP2 reduced thrust (80%)	NADP1 reduced thrust (80%)	NADP1 reduced thrust (80%) acceleration at 4.500ft	NADP1 max. T/O thrust reduced climb thrust (70%)	NADP1 max. T/O thrust reduced climb thrust (70%) acceleration at 4.500ft
Additional fuel burn [kg] (% total flight, 4.750 kg)	-	25 (0,5%)	25 (0,5%)	46 (1,0%)	103 (2,2%)
Additional cost of fuel	-	€ 14	€ 14	€ 25	€ 57

Increased thrusts also means increased engine wear



Why would an airport or an airline use a flight format that causes more noise and suffering?

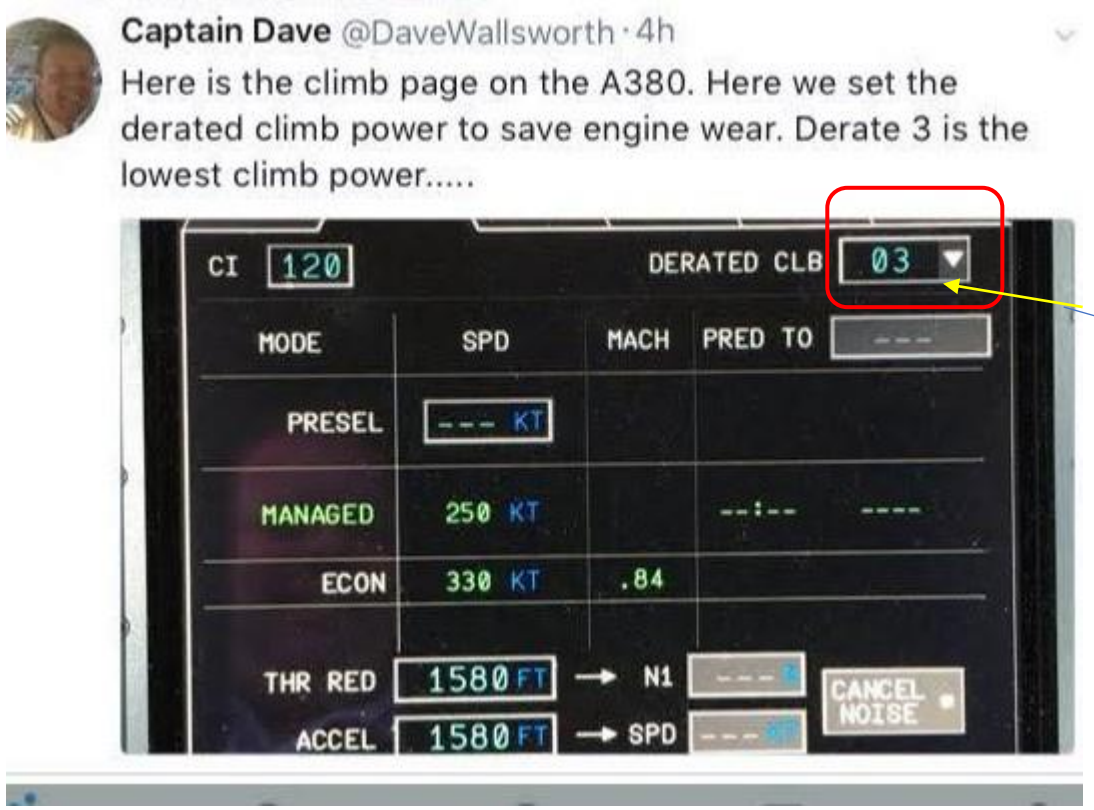
So why would an airport or an airline deliberately use a flight format that causes more people more noise and suffering? The CAA in the document CAP1165 entitled “Managing Aviation Noise” produced in 2014 say:

> “The effect [on fuel used] is greatest for short-haul flights, where the climb phase is a greater proportion of overall fuel used, but even then the fuel change is seldom more than 1%. For long-haul aircraft, whilst the difference between two procedures may be larger in absolute terms, it typically amounts to less than 0.5% of the overall fuel used for a flight.”

Money – but the saving of only the most minute quantities with airlines continuing to tanker. Any extra fuel used with consequent CO2 emissions is dwarfed by the extra amounts used and emitted through tankering!

Is saving on maintenance costs a reason for low flying?

There has been some suggestion that BA can save on engine wear using a slow rate of climb. BA's A380 pilot "Captain Dave" explains on Twitter:



Derate 3 climb, which is the lowest climb power

Emissions

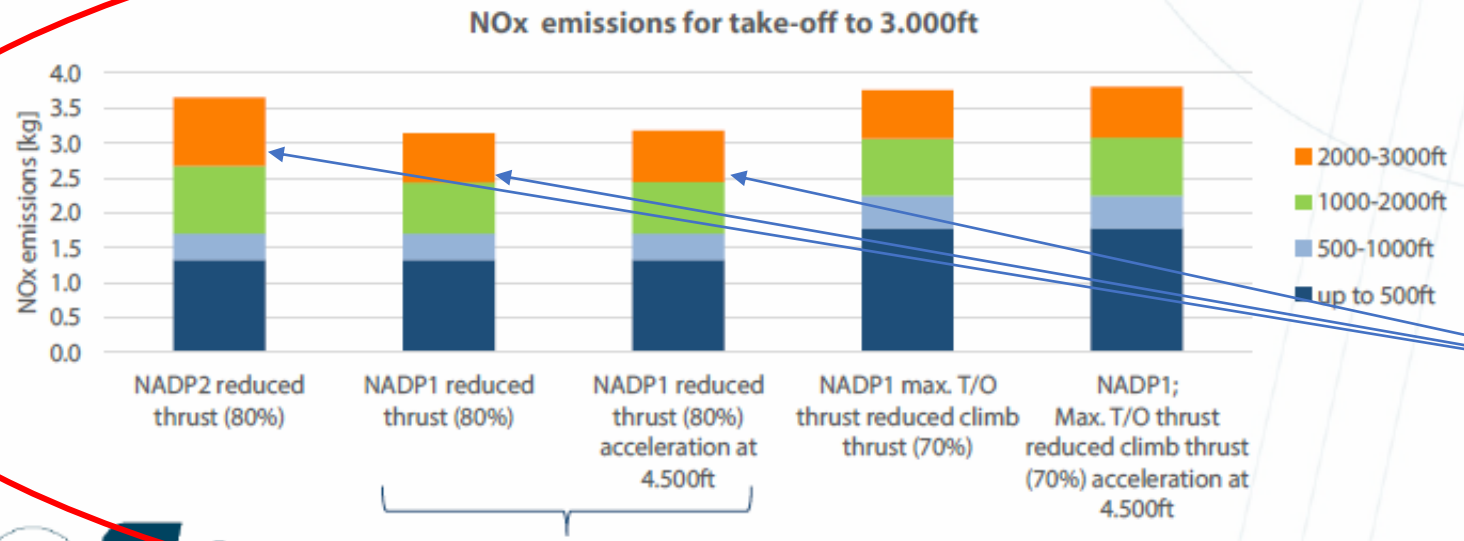
The NOx emissions are the same at ground level with reduced thrust NADP1 and lower from 1,000’; there is less NOx produced using NADP1 all the way up to 4,500’ as we see from To70 below, with consequent benefits to communities in and around London. Studies have shown that emissions from aircraft can be blown downwind for over 20 kilometres.

Fuel burn and NOx

Additional fuel burn and NOx increase per flight with NADP1 and reduced thrust settings.

Fuel burn	NADP2 reduced thrust (80%)	NADP1 reduced thrust (80%)	NADP1 reduced thrust (80%) acceleration at 4.500ft	NADP1 max. T/O thrust reduced climb thrust (70%)	NADP1 max. T/O thrust reduced climb thrust (70%) acceleration at 4.500ft
Additional fuel burn [kg] (% total flight, 4.750 kg)	-	25 (0,5%)	25 (0,5%)	46 (1,0%)	103 (2,2%)
Additional cost of fuel	-	€ 14	€ 14	€ 25	€ 57

Increased thrusts also means increased engine wear



Pollution reduced in mixing zone to 3000ft

NOx emissions lower with NADP1 from 1,000' – the same lower down

The effects of different thrust levels

To70 in their presentation to the HCNF have been meticulous in distinguishing the different thrusts, their effects on noise and the estimated number of people affected by an increase or reduction in noise. Their table below shows this:

Airbus A320 – Affected Population per 5 dB LAmax

Population 2018 (x 1,000):

LAmax	NADP2 reduced thrust (80%)	NADP1 reduced thrust (80%)	NADP1 reduced thrust (80%) start of acceleration at 4.500ft	NADP1 max. thrust	NADP1 max. T/O thrust reduced climb thrust (70%)	NADP1 Max. T/O thrust reduced climb thrust (70%) acceleration at 4.500ft
60 dB	148	147	121	188	127	107
65 dB	66	44	35	82	24	26
70 dB	8.8	2.9	3.0	4.0	3.4	3.4

NADP1

Start acceleration at 4.500ft

Max. thrust

ICAO document 9888 on steeper climbs and continuous descents. There can be substantial reductions in noise

The ICAO document number 9888 produced in 2010 contains a number of studies on noise reduction for both departures and arrivals. A study of various airports in Japan showed a noise difference of between 2-9 dB for departures calculated between NADP-1,-2 and steepest climb at 6 km from brake release point depending on aircraft type.

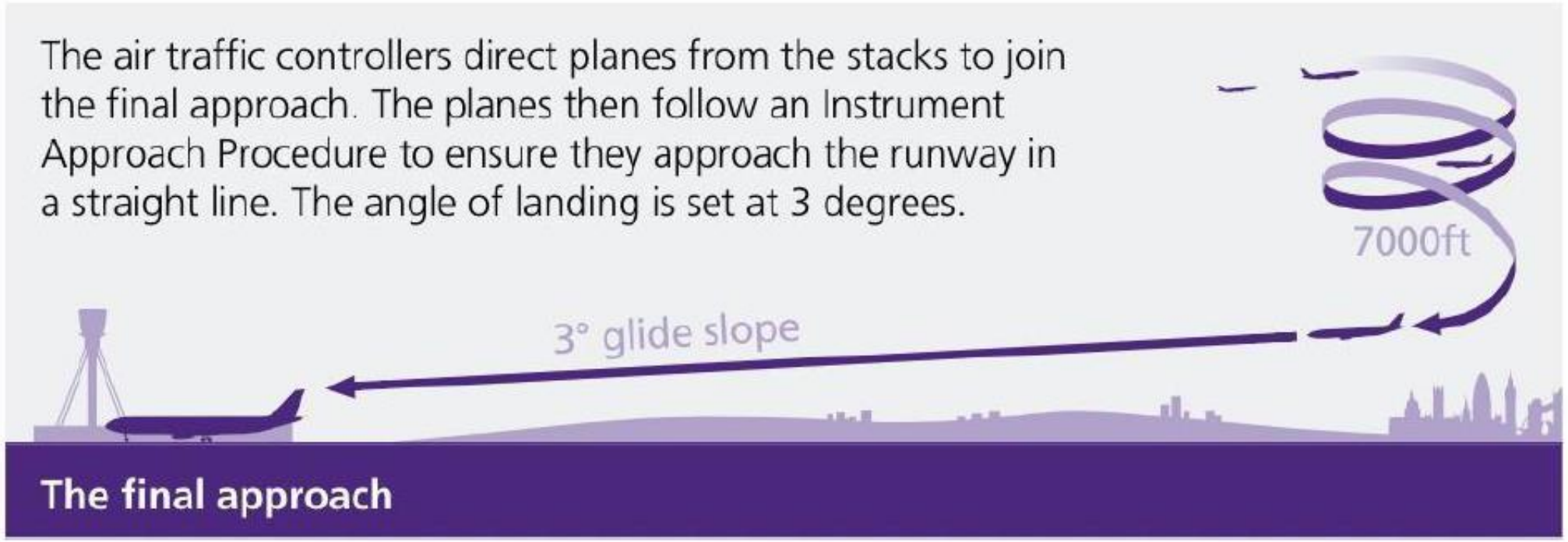
Arrivals

For arrivals the same ICAO document 9888 shows the potential for continuous descent arrivals to give a benefit of between 6 – 12 dBA for communities underneath. So why are aircraft so low in south east London?

In its latest consultation on the angle of arrival descent at Heathrow it is said that “This area potentially impacted by SSA [Slightly Steeper Approaches] is based on the extent of the final approaches for Heathrow’s runways, extended from the runway threshold out to 10 nautical miles (NM) and so is the defined consultation zone.” Let us look at this.

Heathrow currently provide that aircraft should descend continuously at the rate of 3^{o} on the final glide slope but are trialling an increased 3.2^{o} slope.

Slide from Heathrow Consultation



There are no set routes for aircraft between the holding stacks and final approach to land. While the overall patterns are similar, the precise position of aircraft in the skies varies from flight to flight and day to day. Aircraft are tactically positioned by Air Traffic Control onto final approach.

So: what is the actual rate of descent?

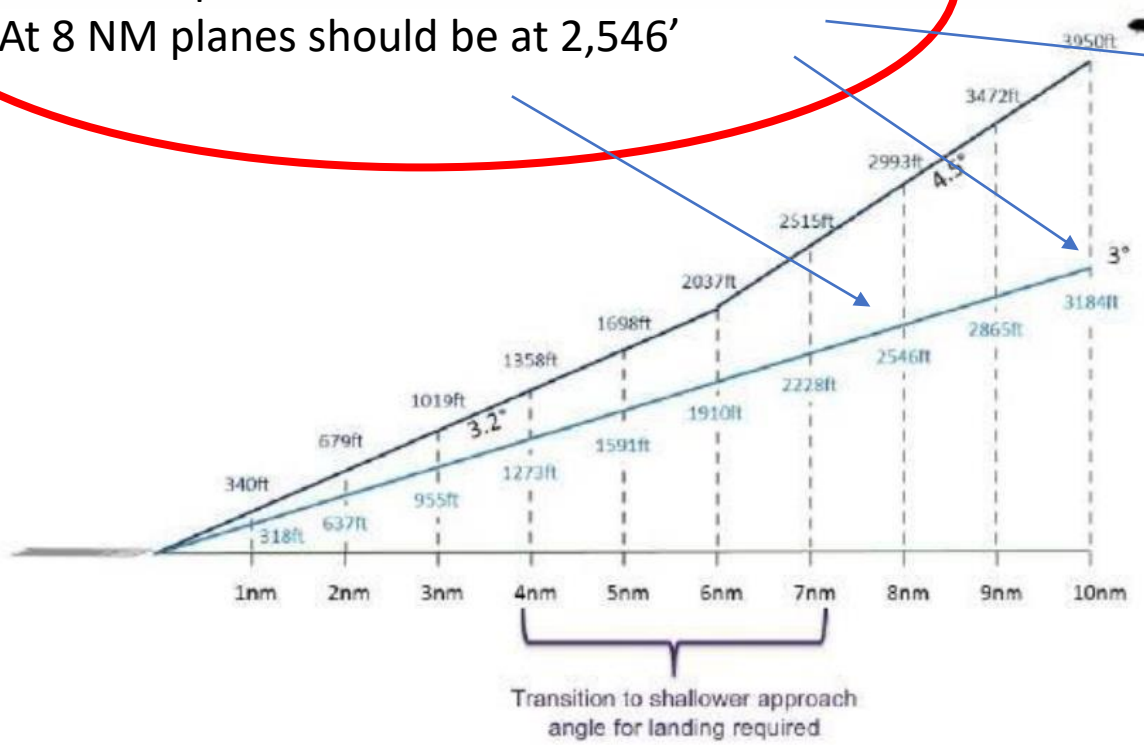
Is it currently 3^{o} as claimed or is it lower? What of the trial at 3.2^{o}?

For this illustration we will go back to 12.88 nautical miles (23.87 kilometres) to Denmark Hill which covers an area severely affected by aircraft noise and which is represented on the HCNF.

Let us look at the graph of various approach angles with the aircraft heights produced by Heathrow:

Extracts from the SSA Consultation document show the glide slopes and the minimum heights necessary in order to maintain the angle of descent

To achieve a constant 3^{o} glide in to Heathrow:
At 10 NM planes should be at 3,185’
At 8 NM planes should be at 2,546’

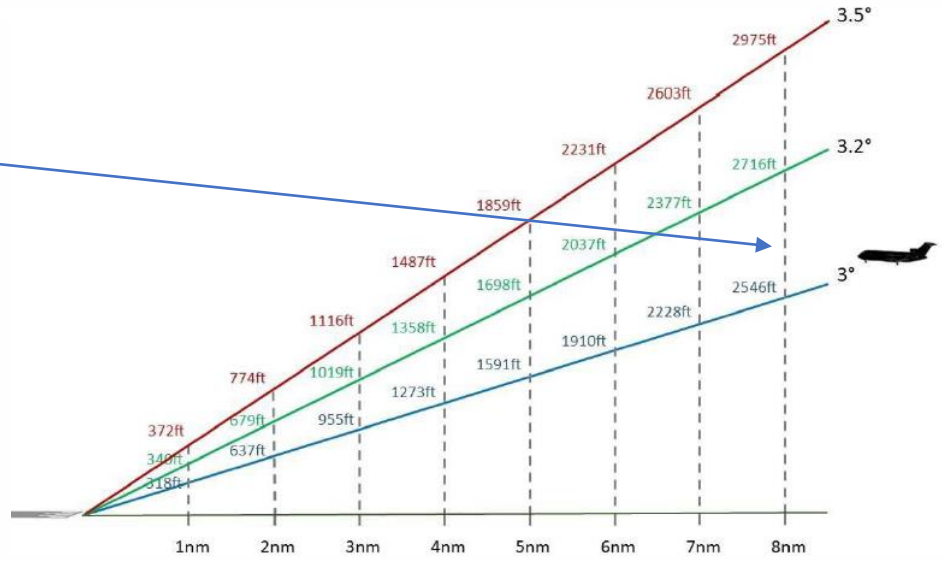


What are the benefits of SSA?

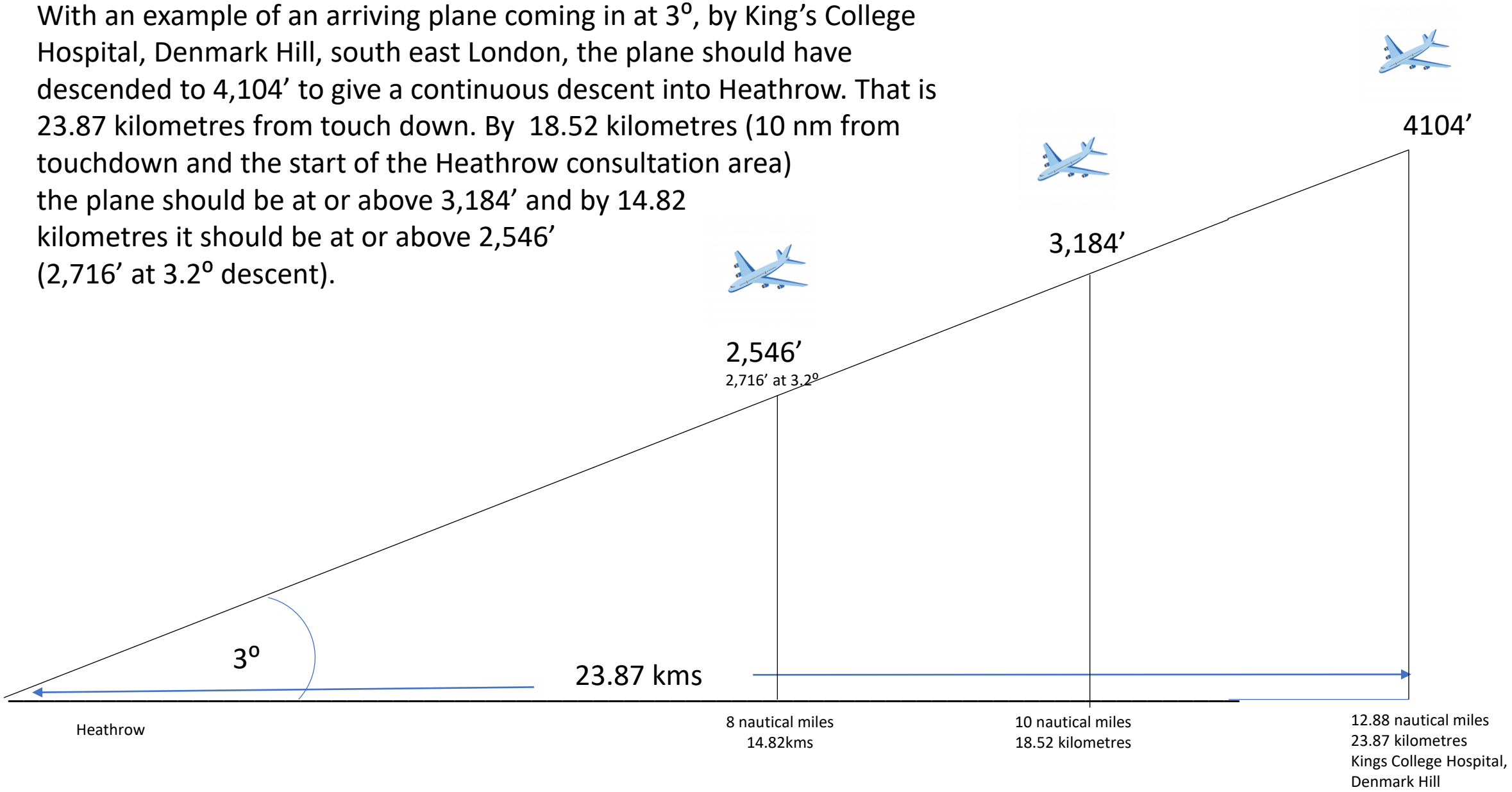
Increasing an aircraft’s glide path (angle of approach) reduces noise in two ways:

- It increases the height of the aircraft over the ground, increasing the distance over which sound travels before it reaches a population.
- It increases an aircraft’s rate of descent, reducing the amount of engine power required and helping to reduce the amount of noise emitted.

The illustration below shows the increase in height of an aircraft flying a steeper approach compared to a 3.0° approach.



With an example of an arriving plane coming in at 3º, by King's College Hospital, Denmark Hill, south east London, the plane should have descended to 4,104' to give a continuous descent into Heathrow. That is 23.87 kilometres from touch down. By 18.52 kilometres (10 nm from touchdown and the start of the Heathrow consultation area) the plane should be at or above 3,184' and by 14.82 kilometres it should be at or above 2,546' (2,716' at 3.2º descent).



AIP: " 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." [para. 9 section 2.21]

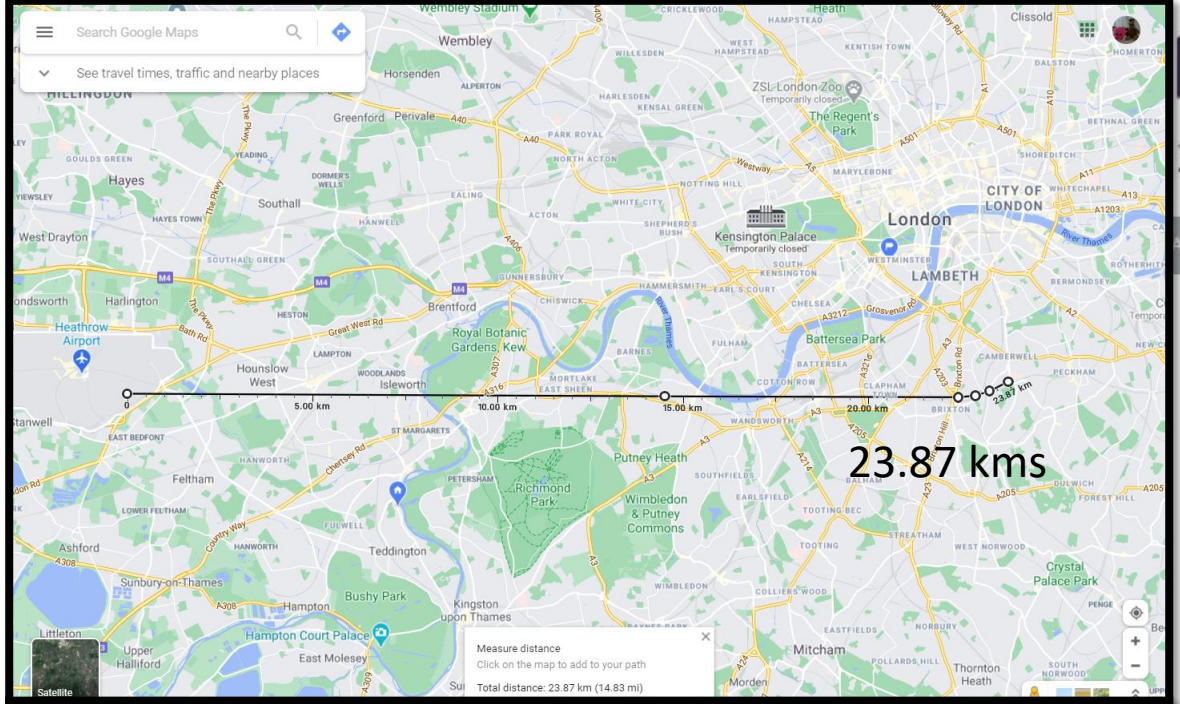
xPlane Results for arrivals

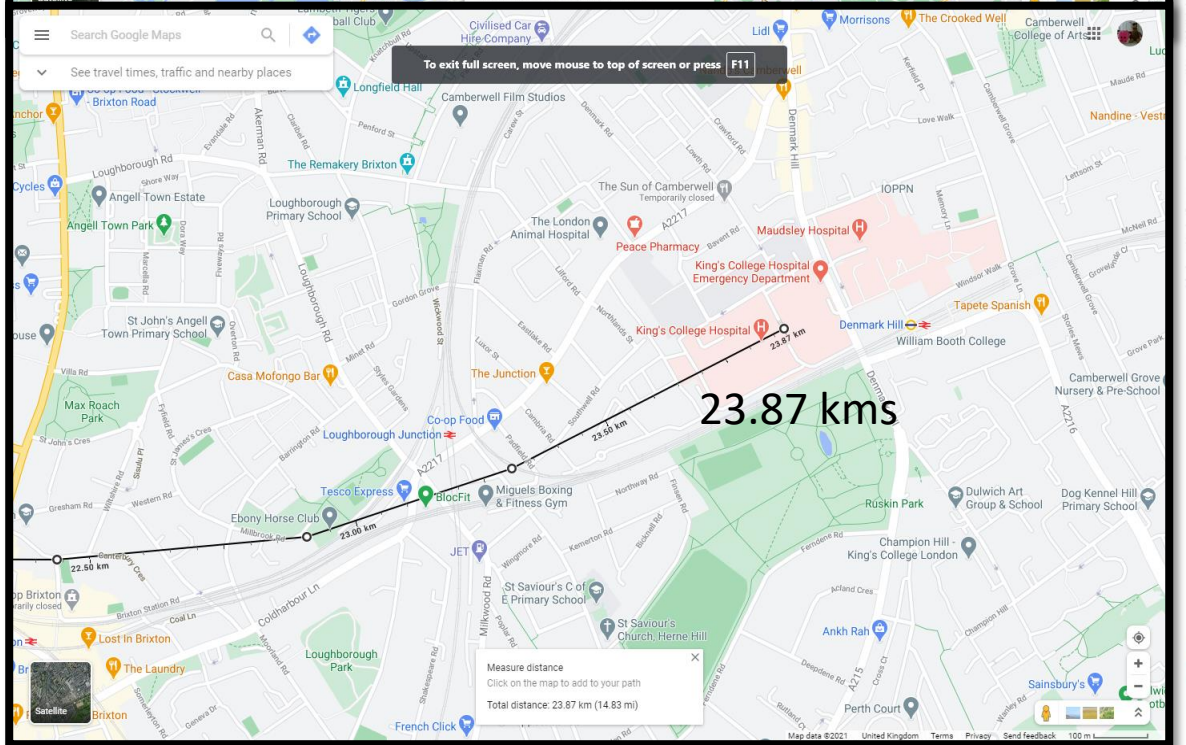
At Kings College Hospital, Denmark Hill which is 12.88 nautical miles (23.87 kilometres) from touchdown, every airline coming into Heathrow flew a plane at a narrower angle than 3^{o} and below 4,104'. According to xPlane in the 7 days from the 5th May 2019 of 3,244 planes crossing, only 167 planes were higher than 4,000' after applying the filter to take out planes lower than 4,000'. The results showed the lowest BA plane to be at 3,100' instead of 4,100'. If it were a small A319 the increase in noise from 3,100' compared to 4,100' according to the NATS Appendix J tables would be 3dB – a 30% increase in loudness.

At Putney and 14.1 kilometres, 8 nautical miles, in the 7 days following the 22nd May 2019 every airline coming into Heathrow flew a plane at a narrower angle than 3^{o} and below 2,546' with only 55 planes, out of a total of 4,767 flying, above 2,500' after applying the filter to take out planes lower than 2,500'. The results showed the lowest BA plane to be at 2,156' instead of 2,546'. If it were a small A319 the increase in noise from 2,156' compared to 2,546' according to the NATS Appendix J tables would be 2.5dB. With a large twin engine plane the increase in noise would be 3dB - a 30% increase in loudness.

Heathrow say in their consultation that "It [Slightly Steeper Approach] increases an aircraft's rate of descent, reducing the amount of engine power required and helping to reduce the amount of noise emitted"

Quite simply this is not happening. We suggest that funds be set aside for To70 to be immediately commissioned to study the arrivals paths and report on the current state and whether aircraft are descending too low and in an unnecessarily narrow swathe. They should investigate the possibility of increasing the height of arriving aircraft and widening the swathe of flights





Heathrow

xPlane - Find out what flies over your home

About xPlane | xPlane | How to use xPlane

xPlane allows you find out information about air traffic above your location. To do this we need some information.

Where do you live?

Please provide the postcode for the location where you want to analyse Heathrow flights. Select the location when xPlane suggests a match for your postcode.

SE5 9RS

Kings College Hospital, Denmark Hill

xPlane provides you information on all Heathrow traffic that enters the "Home Zone". Think of the home zone as an inverted cone around the location. It's presented as two circles on the map; the ground radius and the uppermost radius (dashed circle).

By setting the ground radius you determine the distance at which aircraft are considered to be near the location.

Radius: 1mi Apply

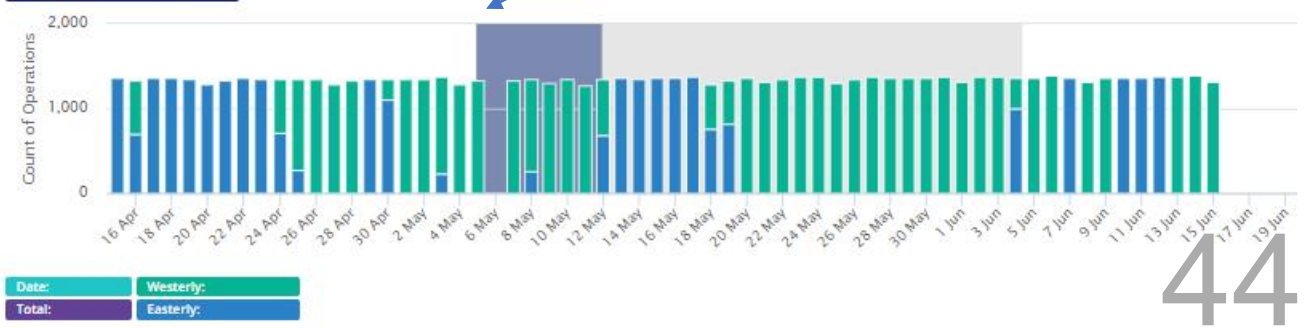
What day or days do you want to look at?

xPlane allows you to review the Heathrow flights that flew near the location for up to seven days. The direction planes fly at Heathrow depends on the direction of the wind. The directions used are referred to as Easterly and Westerly operations. The flights near a location change depending on the operating direction. The chart shows operating direction using the colour of the bars.

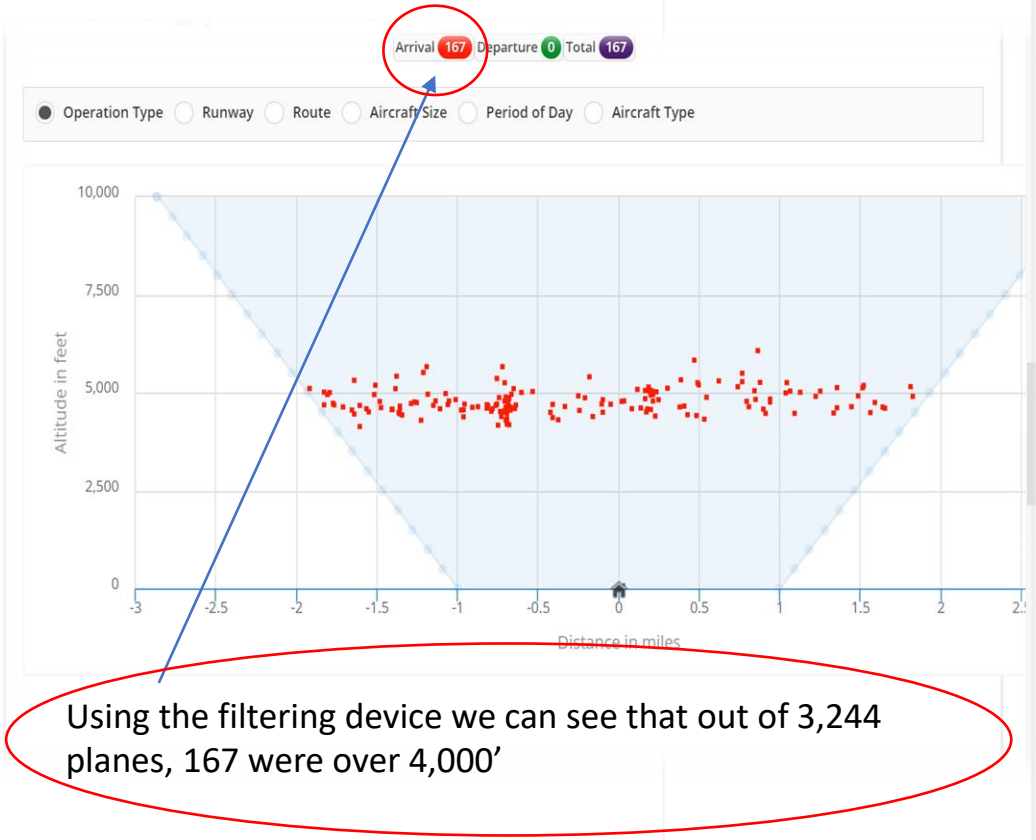
Select a date using the calendar control and pick the number of days to review.

Start date of sample

05/05/2019 7 Days Apply

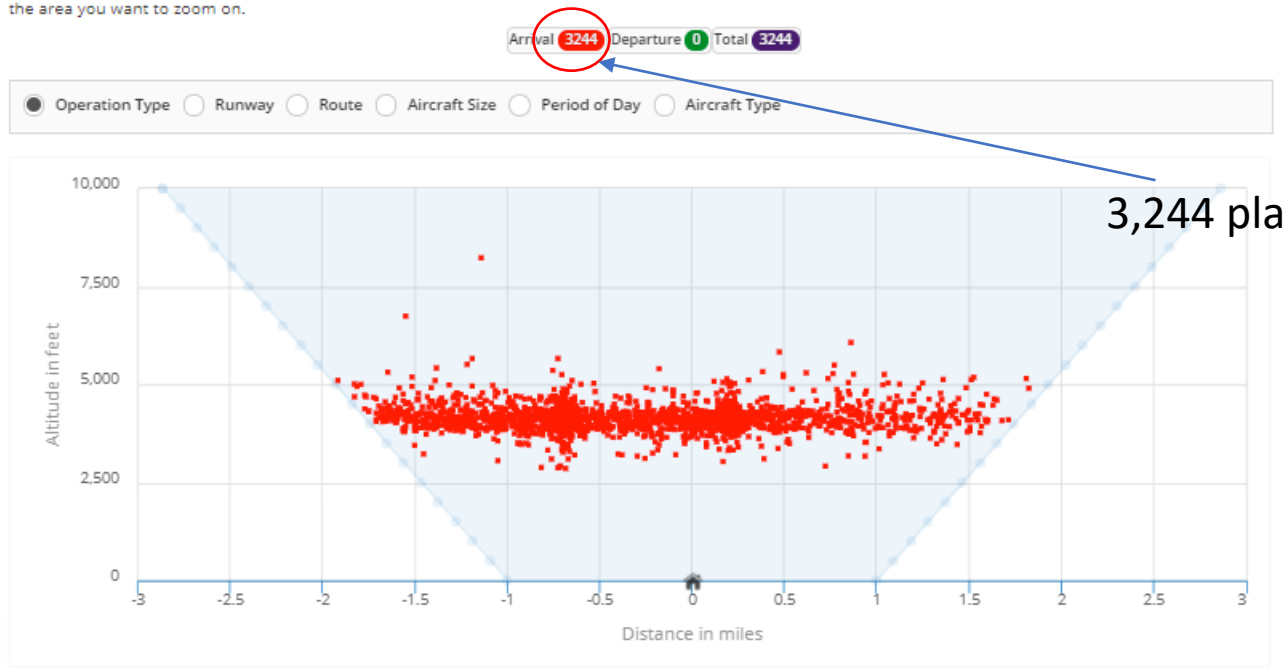


Kings College Hospital, Denmark Hill.
During the 7 days starting on the 5th May 2019, 3244 planes passed overhead. Of those 3244, 167 were above 4,000' (4,104' necessary to retain 3°)



Using the filtering device we can see that out of 3,244 planes, 167 were over 4,000'

the area you want to zoom on.

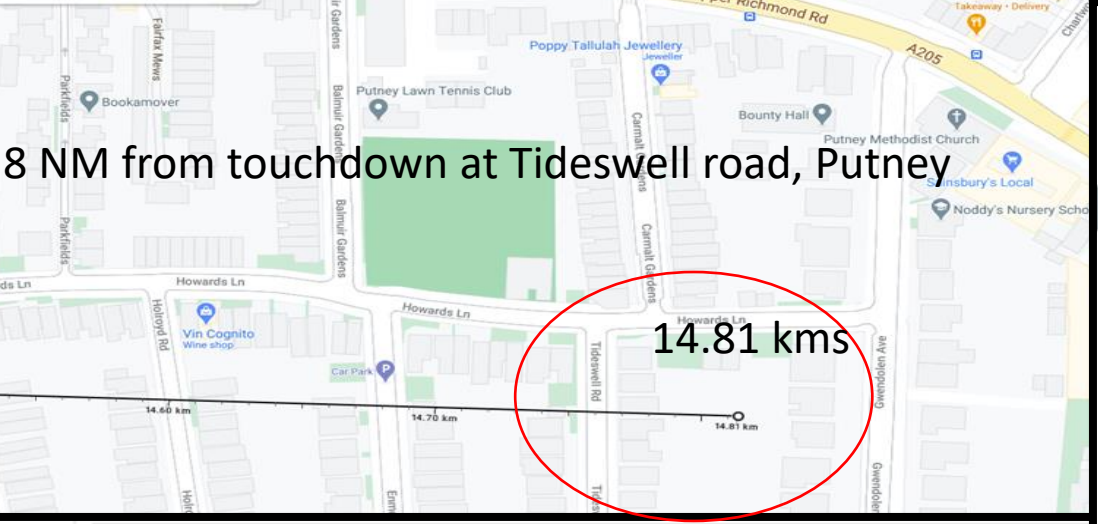


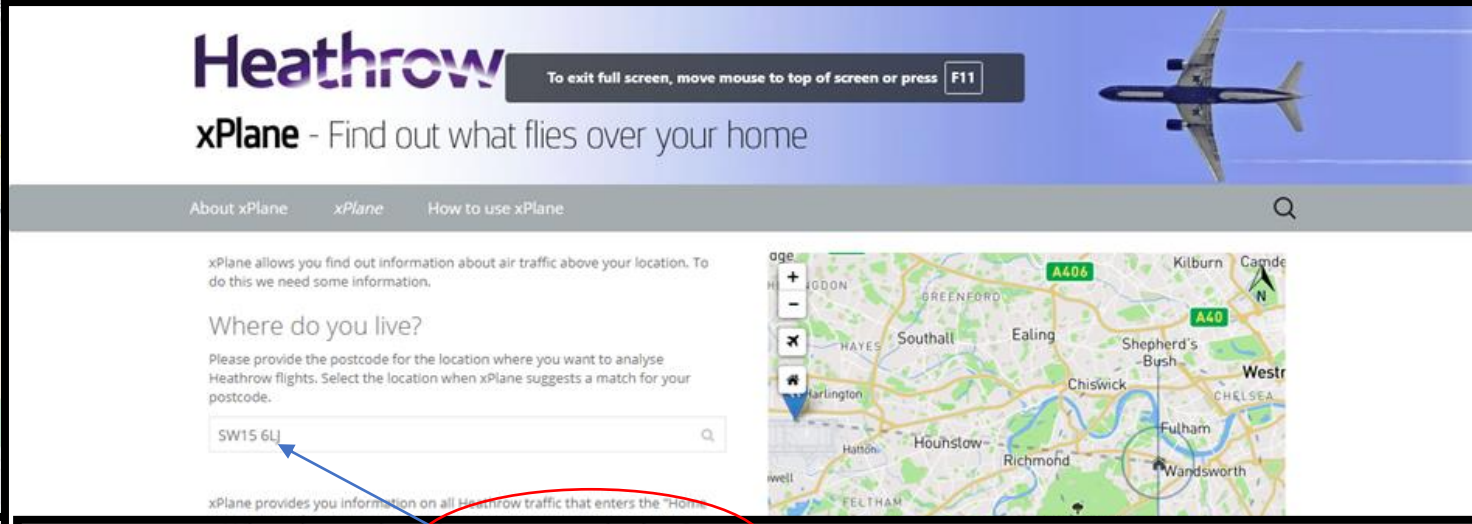
3,244 planes

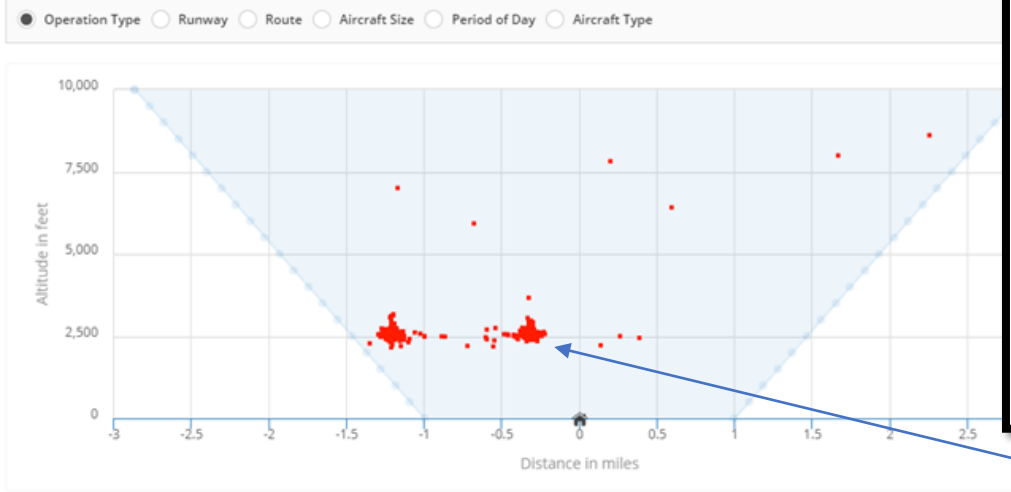
Lowest BA flight

Aircraft Type Airline

AIRLINE	TIMES THROUGH GATE	AVERAGE PASSENGER CAPACITY	MINIMUM ALTITUDE (FEET)
BAW	1,633	197	3,100
VIR	111	280	3,570
AAL	99	279	3,179
EIN	96	174	3,114
DLH	93	173	3,501
UAL	75	231	3,688
SAS	74	177	3,780
EWG	66	153	2,890
SWR	60	161	3,629
Others	937	229	2,858

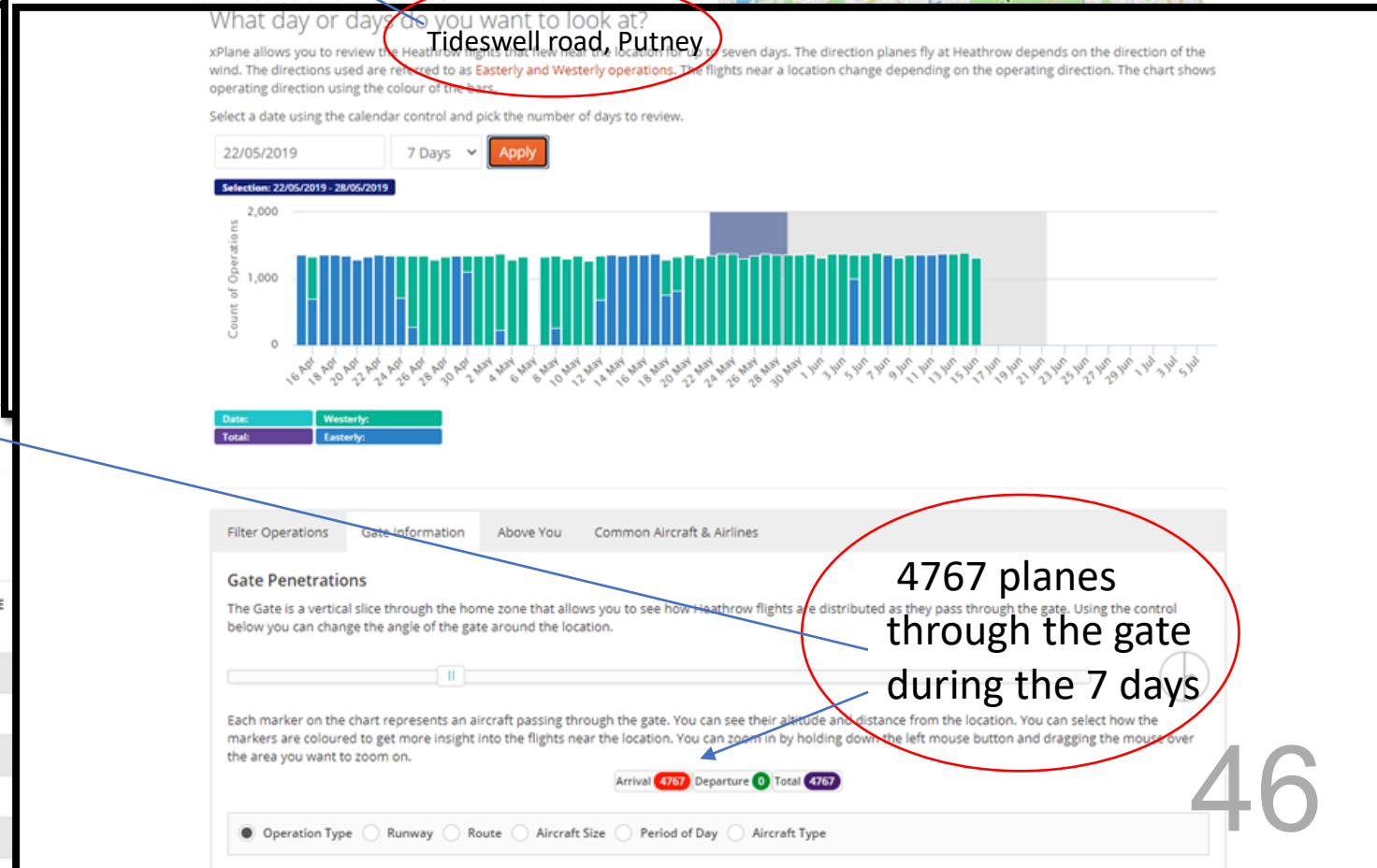






Aircraft Type ● Airline

AIRLINE	TIMES THROUGH GATE	AVERAGE PASSENGER CAPACITY	MINIMUM ALTITUDE (FEET)
BAW	2,421	197	2,156
VIR	168	281	2,467
EIN	159	174	2,349
AAL	143	280	2,457
DLH	140	177	2,428

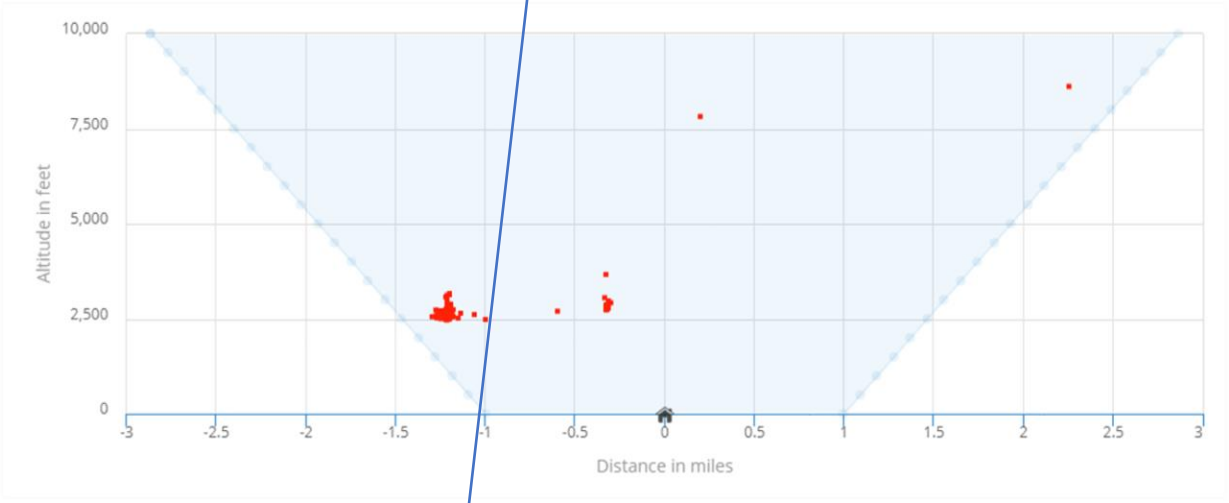


4767 planes through the gate during the 7 days

Each marker on the chart represents an aircraft passing through the gate. You can see their altitude and distance from the location. You can select how the markers are coloured to get more insight into the flights near the location. You can zoom in by holding down the left mouse button and dragging the mouse over the area you want to zoom on.

Arrival 618 Departure 0 Total 618

Operation Type | Runway | Route | Aircraft Size | Period of Day | Aircraft Type



Aircraft Type | Airline

AIRLINE	TIMES THROUGH GATE	AVERAGE PASSENGER CAPACITY	MINIMUM ALTITUDE (FEET)
BAW	343	212	2,490
AAL	27	272	2,484
UAL	27	235	2,523

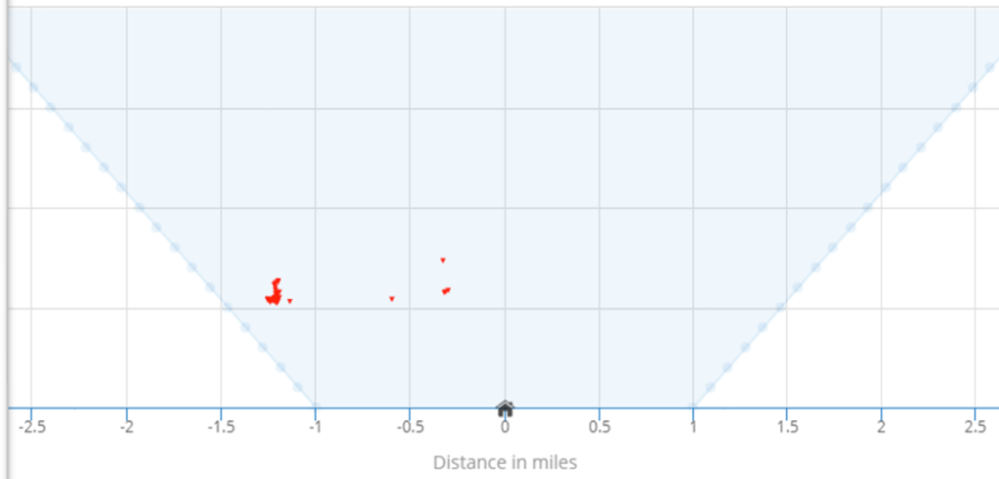
Of 4,767 planes, 618 were above 2,400’

Of 4,767 planes only 55 were above 2,500’ (2,546’ required to maintain 3º)

…et more insight into the flights near the location. You can zoom in by holding down the left mouse button and dragging the m… on.

Arrival 55 Departure 0 Total 55

Runway | Route | Aircraft Size | Period of Day | Aircraft Type



Airline

AIRLINE	TIMES THROUGH GATE	AVERAGE PASSENGER CAPACITY	MINIMUM ALTITU… (FEET)
BAW	21	190	2,628
UAL	10	243	2,648
SWR	4	135	2,648
SAS	4	189	2,671

Conclusion of the ICAO Doc 9888 on noise abatement procedures

Conclusions

3.9 Noise abatement procedures form one leg of the Balanced Approach*, and as such, continued development and optimization of operational procedures are essential for minimizing the environmental impact of aviation. Operational procedures can often be implemented with the existing fleet and have the potential to make an immediate improvement in the environmental impact of aviation. As described in some of the projects contained in this document, the predicted and measured improvements to noise, emissions and fuel burn can be substantial. Continuing R&D must work to optimize procedures, determine the technologies needed and identify pathways to facilitate acceptance by airports, air carriers, pilots, ANSPs** and communities around airports.

*the Balanced Approach is the main overarching ICAO policy on aircraft noise adopted by EU member states and the UK government

**Air Navigation Service Provider

Conclusions

1. There are simply enormous differences in height on departure between planes of the same type travelling similar distances. BA are consistently near the bottom in height.
2. Heathrow and BA are not abiding by the obligation in the AIP to operate in a manner calculated to cause least disturbance
3. The failure of Heathrow and BA to abide by this obligation and the failure to use the ICAO recognised departure profile of NADP1 causes substantial suffering for more people than necessary. At one point this was as much as 18 decibels effectively making the noise of the lowest plane nearly 4 times higher than that of the highest plane
4. According to Heathrow's xPlane app, there is a failure of aircraft descending into Heathrow to maintain height in order to make even a 3^{o} level of descent let alone a descent of 3.2^{o} proposed in the Heathrow consultation on slightly steeper approaches.
5. There is a need for the communities to have independent expert advice. Enough people suffer from the effects of low flying and there are enough inconsistencies from the industry for there to be a need for communities to be independently represented.
6. Communities affected by Heathrow operations urge Heathrow and BA, its biggest user, to introduce the ICAO NADP1 procedure in accordance with ICAO guidance up to 4,500' on departure as set out by To70, and also continuous descents upon arrival at the very least maintaining a 3^{o} rate of descent. Introduction should be at the earliest opportunity with rules to be enforced if necessary.
7. We suggest that neither Heathrow, nor BA as the biggest user, are engaging in "continued development and optimisation of operational procedures" as recommended by the ICAO in their document 9888. They should do so and their failure to do so and failure to abide by the international guidance is causing needless suffering. There is plenty of medical evidence to support the claim of harm caused by noise, but that is for another time.