

Richmond Heathrow Campaign (RHC)

CAP 1616 Stage 2 Initial Options Appraisal - Heathrow Request for Information, 24 April 2024

RHC has assessed the Initial Options submitted to the CAA Portal on 31 July 2023. The list of options is shown in Annex A attached here as prepared by RHC using the Reports on the CAA Portal.

An example of our analysis is provided here in Annex C for the Base Do Nothing Case and a set of options for Departures to the East from the Southern runway 09R during the Day using PBN. A specific Option from this set of options is shown in Annex B. The Charts show the Base Do Nothing Case on the left and Option B on the right and provide increasing detail as the charts go down the page ending up with the comparison between Base Do Nothing Case and Option B in a noise difference chart.

Annex D raises a concern regarding an apparent discrepancy for Option B where the values of the contours for the Base Do Nothing Case do not reconcile with the same contours taken from Heathrow Airport's 2019 Summer Noise Contours and Noise Action Plan Contours CAP 2001 page 69. For example, the 57 dB contour for the latter is shown as the 51 dB contour for the Base Do Nothing Case. The 6 dB difference feeds through into population numbers resulting in under-estimates of the population in the Base Do Nothing Case. The differences apply to each contour.

RHC emailed Heathrow on 29 October 2023 raising the issue as set out in Annex D here. The shape of all the contours match exactly so it seems impossible that the explanation is due to the CAP 2001 contours being 100% Easterlies and the Base Do Nothing Case contours in the Options appraisal being the easterly proportion of flights of around 30% in the summer period 2019, which is the explanation given by Heathrow in a series of emails recorded in Annex E.

In order to understand and properly assess the options appraisal, RHC believes it essential that the flight frequencies of all the Base Cases and the Options are provided to the communities with whom Heathrow is engaged. Furthermore, the options are three dimensional but the contour output is lateral and for a proper assessment there is a need to know the angles of ascent and descent between ground and 7,000 feet or whatever the highest modelling level might be. The other main input is the noise at source and therefore the type(s) of aircraft or fleet mix needs to be specified. Accordingly, Annex A includes four blank columns for this information which RHC would appreciate receiving from Heathrow.

Peter Willan
Chair, Richmond Heathrow Campaign
24 April 2024

Richmond Heathrow Campaign represents three amenity groups in the London Borough of Richmond upon Thames: The Richmond Society, The Friends of Richmond Green, and the Kew Society, which together have over 2000 members.

Information Required from HAL

INITIAL OPTION LIST
AIRSPACE CHANGE HEATHROW STAGE 2 SUBMISSION TO THE CAA 31 JULY 2023
Assesment by Richmond Heathrow Campaign
Lateral



Flight Frequency e.g. flights /hr	Vertical Angle of acent/descen t rate e.g. %	Noise at source Aircraft type(s)	No.
1. Dep. To West. Southern. PBN. Day. 27L			5 A 13.1 A 13.1 A 13.2 A 13.2 A 13.2 A 13.3 BaseDN A E F G H
2. Dep. To West. Northern. PBN. Day 27R			5 A 13.3 A 13.3 A 13.4 A 13.4 A 13.5 A 13.5 BaseDN A E F G H
3. Dep. To East. Southern. PBN. Day. 09R			6 A 13.8 A 13.8 A 13.9 A 13.9 A 13.10 A 13.10 BaseDN B C F G I J
4. Dep. To East. Northern. PBN. Day. 09L			10 A 13.5 A 13.5 A 13.6 A 13.6 A 13.6 A 13.6 A 13.7 A 13.7 A 13.7 A 13.8 BaseDN A B C D E F G H I J
5. Dep. To West. Southern. PBN. Night. 27L			26 5 A 13.1 A 13.1 A 13.2 A 13.2 A 13.2 A 13.3 BaseDN A E F G H
6. Dep. To West. Northern. PBN. Night 27R			5 A 13.3 A 13.3 A 13.4 A 13.4 A 13.5 A 13.5 BaseDN A E F G H
7. Dep. To East. Southern. PBN. Night. 09R			6 A 13.8 A 13.8 A 13.9 A 13.9 A 13.10 A 13.10 BaseDN B C F G I J
8. Dep. To East. Northern. PBN. Night. 09L			10 A 13.5 A 13.5 A 13.6 A 13.6 A 13.6 A 13.6 A 13.7 A 13.7 A 13.7 A 13.8 BaseDN A B C D E F G H I J
9. Arr. From West. Southern. Vector. Day. 09R			26 11 C15.10 C15.10 C15.10 C15.10 C15.11 C15.11 C15.11 C15.11 C15.12 C15.12 C15.12 C15.12 BaseDN A B C D E F G H I J K
10. Arr. From West. Northern. Vector. Day 09L			11 C 15.7 C 15.7 C 15.7 C 15.7 C 15.8 C 15.8 C 15.8 C 15.8 C 15.9 C 15.9 C 15.9 BaseDN A B C D E F G H I J K
11. Arr. From East. Southern. Vector. Day. 27L			11 C15.1 C15.1 C15.1 C15.1 C15.2 C15.2 C15.2 C15.2 C15.3 C15.3 C15.3 C15.3 BaseDN A B C D E F G H I J K
12. Arr. From East. Northern. Vector. Day. 27R			11 C15.4 C15.4 C15.4 C15.4 C15.5 C15.5 C15.5 C15.5 C15.6 C15.6 C15.6 C15.6 BaseDN A B C D E F G H I J K
13. Arr. from West. Southern. PBN. Night. 09R			44 18 B 14.10 B 14.10 B 14.10 B 14.10 B 14.10 B 14.10 B 14.10 B 14.10 B 14.11 B 14.11 B 14.11 B 14.11 B 14.11 B 14.11 B 14.11 B 14.12 B 14.12 B 14.12 B 14.12 BaseDN A B C D E F G H I J L M N O P Q S T U
14. Arr. from West. Northern. PBN. Night. 09L			19 B 14.7 B 14.7 B 14.7 B 14.7 B 14.7 B 14.7 B 14.7 B 14.7 B 14.7 B 14.8 B 14.8 B 14.8 B 14.8 B 14.8 B 14.8 B 14.8 B 14.9 B 14.9 B 14.9 B 14.9 BaseDN A B C D E F G H I K L M O P Q S T U
15. Arr. from East. Southern. PBN. Night. 27L			20 B 14.1 B 14.1 B 14.1 B 14.1 B 14.1 B 14.1 B 14.1 B 14.1 B 14.1 B 14.2 B 14.2 B 14.2 B 14.2 B 14.2 B 14.2 B 14.2 B 14.3 B 14.3 B 14.3 B 14.3 B 14.3 B 14.3 BaseDN A B C D E F G H L M N O P Q R S T U V W
16. Arr. from East. Northern. PBN. Night. 27R			22 B 14.4 B 14.4 B 14.4 B 14.4 B 14.4 B 14.4 B 14.4 B 14.4 B 14.4 B 14.5 B 14.5 B 14.5 B 14.5 B 14.5 B 14.5 B 14.5 B 14.5 B 14.6 B 14.6 B 14.6 B 14.6 B 14.6 B 14.6 B 14.6 B 14.6 B 14.6 B 14.6 BaseDN A B C D E F G H J K M N O P Q R S T U V W X
17. Arr. From West. Southern. Vector. Night. 09R			79 11 C15.10 C15.10 C15.10 C15.10 C15.11 C15.11 C15.11 C15.11 C15.12 C15.12 C15.12 C15.12 BaseDN A B C D E F G H I J K
18. Arr. From West. Northern. Vector. Night 09L			11 C 15.7 C 15.7 C 15.7 C 15.7 C 15.8 C 15.8 C 15.8 C 15.8 C 15.9 C 15.9 C 15.9 C 15.9 BaseDN A B C D E F G H I J K
19. Arr. From East. Southern. Vector. Night. 27L			11 C15.1 C15.1 C15.1 C15.1 C15.2 C15.2 C15.2 C15.2 C15.3 C15.3 C15.3 C15.3 BaseDN A B C D E F G H I J K
20. Arr. From East. Northern. Vector. Night. 27R			11 C15.4 C15.4 C15.4 C15.4 C15.5 C15.5 C15.5 C15.5 C15.6 C15.6 C15.6 C15.6 BaseDN A B C D E F G H I J K

44
219

Notes:
BaseDN Base year 2019 and Future Do Nothing
A, B, C Reports on the CAAs Airspace Change Portal



Figure 2 BaseDN



Figure 1 Option B

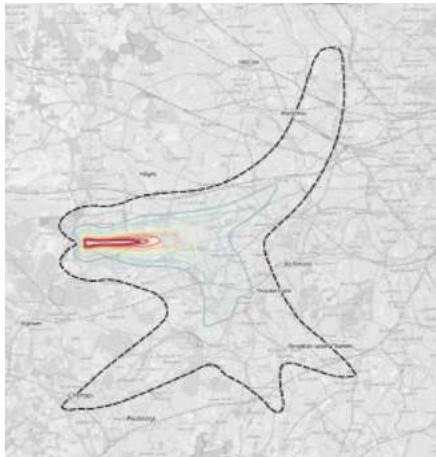


Figure 3 BaseDN

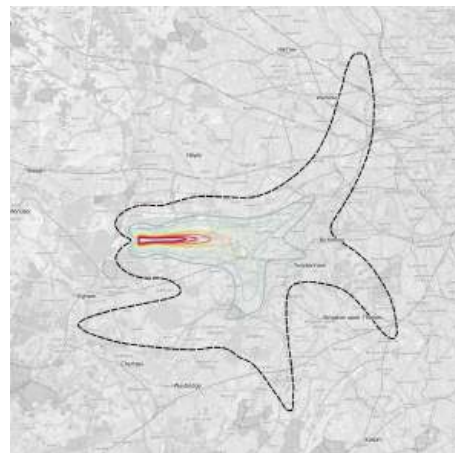


Figure 4 Option B

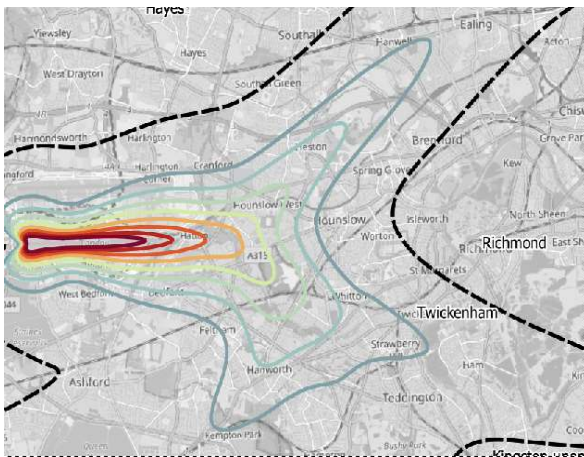


Figure 5 Dep To East Southern PBN Day 09R BaseDN

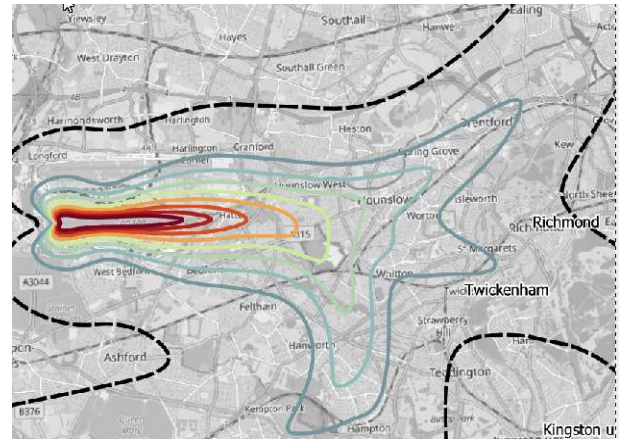
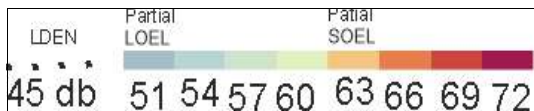


Figure 6 Dep To East Southern PBN Day Option B



Green - 1dB difference or more
Brown + 1dB difference or more

P Willan 21/10/23

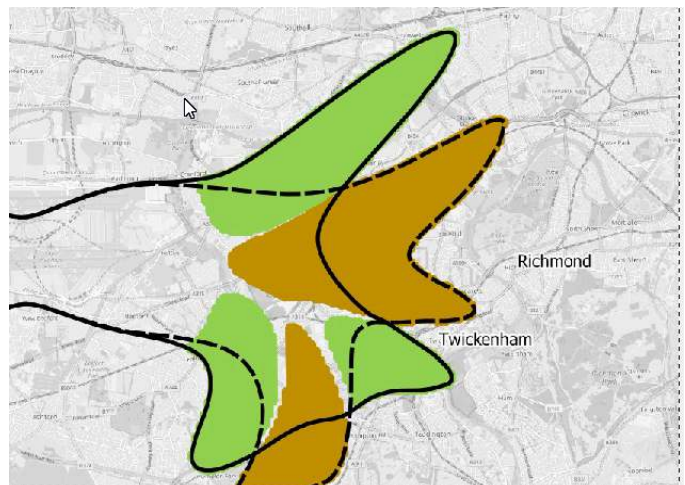


Figure 7 Option B

21-Oct-23

Options 6
Discarded 4 A,D,E,H

ANNEX C

3. Dep. To East. Southern. PBN. Day. 09R

	Option	A 13.8 BaseDN	A 13.8 B	A 13.9 C	A 13.9 F	A 13.10 G	A 13.10 I	A 13.10 J	avg	std	std%	med
Pop > Partial LOAEL (day-time LAeq, 16h)	Pop	169	194	175	178	172	174	175	177	8	4%	175
Pop at least one event of N65 Lmax (day-time)	Pop	2,205	1,942	1997	1738	2041	1825	1844	1,942	145	7%	1,942
Air Quality												
Climate Track distance	Miles	444	432	423	437	446	433	433	435	7	2%	433
AONB/Nat Parks overflown once a day on avg (day-time)	km2	115	25	15	37	37	11	9				
AONB/Nat Parks at least one event of N65 Lmax (day-time)	km2		10	9	11	1	7	7				
Richmnd Pk overflown at least once a day on avg (day-time)	km2	4	7	5	7	4	5	0				
RAMSAR, SAC, SPA, SSSI sites overflown 0-1640ft change	Number	na	0	3	0	0	3	3				
RAMSAR, SAC, SPA, SSSI sites overflown 0-3000ft change	Number	na	4	7	4	7	6	4				
Capacity/Resilience												
General Aviation comment												
Change in fuel Burn +/-	Tonnes/yr		-870	-1510	-530	90	-920	-920				
Pop Overflown (60° 7kft) per day frequency >=												
1	Pop	3,603	1,690	1800	1222	1604	1341	1414	1,811	755	42%	1,604
5	Pop	2,050	1,480	1591	1086	1456	1127	1193	1,426	312	22%	1,456
10	Pop	1,357	1,294	1417	1003	1319	1034	1094	1,217	156	13%	1,294
20	Pop	673	976	1056	852	1028	890	951	918	120	13%	951
50	Pop	5	31	6	20	16	6	6	13	9	72%	6
100	Pop		3	1	2	1	1	1	2	1	51%	1
200	Pop											
Pop Noise Events per day frequency >= N65 Lmax												
1	Pop	2,205	1,942	1997	1738	2041	1825	1844	1,942	145	7%	1,942
5	Pop	857	772	823	850	848	854	899	843	36	4%	850
10	Pop	526	484	528	542	510	535	595	531	31	6%	528
20	Pop	342	314	351	364	335	350	382	348	20	6%	350
50	Pop	110	151	106	131	112	104	105	117	16	14%	110
100	Pop	34	52	39	47	22	34	34	37	9	24%	34
200	Pop	0	0	0	0	0	0	0				
Noise Exposure												
Pop > WHO Threshold (>45dB Lden)	Pop	734	677	741	752	739	768	814	746	38	5%	741
Pop > Partial LOEL (>51 dB LAeq 16hr)	Pop	169	194	145	178	172	174	175	172	13	8%	174
Noise Exposure Change												
Pop with at least 1 dB decrease above Partial LOEL	Pop -	0	89	43	71	60	60	51	53	26	48%	60
Pop with at least 1 dB decrease brought out of Partial LOEL	Pop -	0	60	26	42	28	27	18	29	17	60%	27
Pop no change within Parial LOEL	Pop 0	0	43	89	61	57	73	84	58	28	48%	61
Pop with at least 1 dB increase above Partial LOEL	Pop +	0	123	69	89	82	68	58	70	35	49%	69
Pop with at least 1 dB increase brought into Partial LOEL	Pop +	0	86	32	51	30	32	23	36	25	68%	32

Airspace Modernisation - Heathrow submission to CAA July 2023. Noise Contour and Population Discrepancies

The noise contours for summer 2019 as presented in CAP 2001 for Departures on Easterlies during the Day are shown in Figure 1 over-page. The noise contour for the Base/Do Nothing case used by Heathrow in their modelling of airspace change options seemingly is intended to replicate the contours in Figure 1. And this they seem to do as shown by Figure 2 over-page, which has been taken from Appendix A13.8 page 9 on the CAA airspace Change Portal for Heathrow's airspace modernisation.

However, using the key provided on page 9, the 51dB contour is actually the 57dB contour in CAP 2001, for example. All the contours exhibit a similar mismatch.

Also, on page 9 it says 'The Total population within Partial LOAEL(>51 dB LAeq,16h) 07:00 - 23:00 is 169,000. Yet in CAP 2001 it is stated on page 27 that the population exposed above 54 dB is 435,300. The population at >51 dB surely must be much greater than that at >54 dB and therefore the 169,000 in the airspace change report is seemingly substantially understated.

The other airspace change options have not been examined in this detail but looking at the population estimates they appear to be substantially under-estimating the number of people exposed. Also, the noise contours maps for all the options appear to have similar discrepancies.

Of course there may be a perfectly good explanation but it would be appreciated if Heathrow could explain the seeming discrepancies in population numbers exposed and the noise contour maps.

Peter Willan, Richmond Heathrow Campaign
willan829@btinternet.com

29 October 2023

Figure B6 Heathrow 2019 and 2006 average summer day 54-72 dB 100% E_{L_{aeq,16h}} noise contours (with 2006 N-S runway usage)

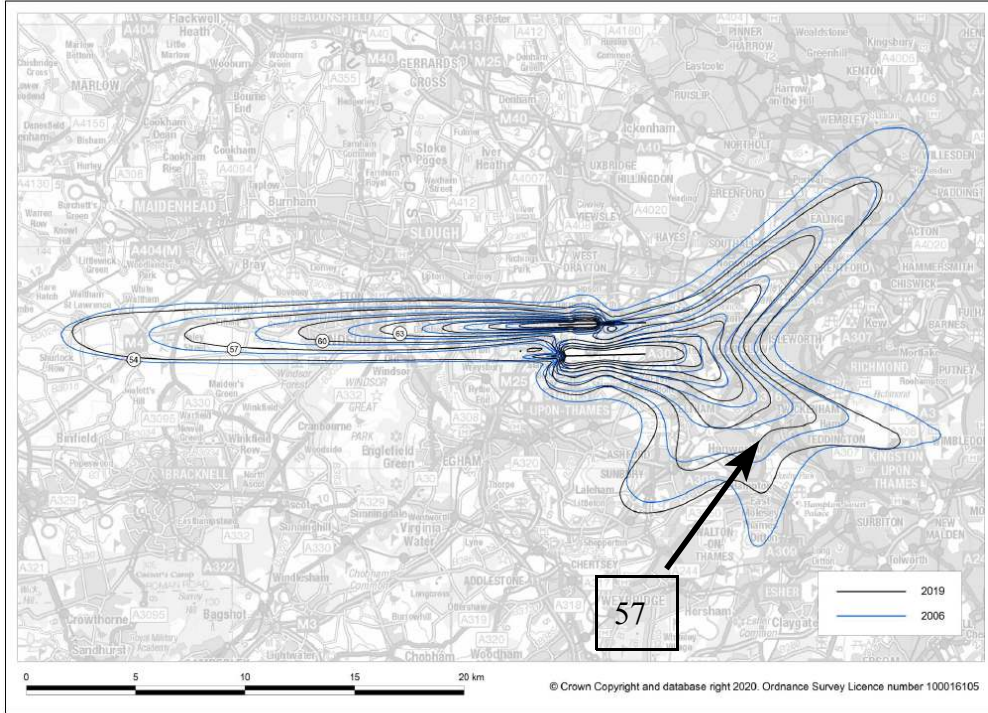


Figure 1 Heathrow Airport 2019 Summer Noise Contours and Noise Action Plan Contours CAP 2001 page 69

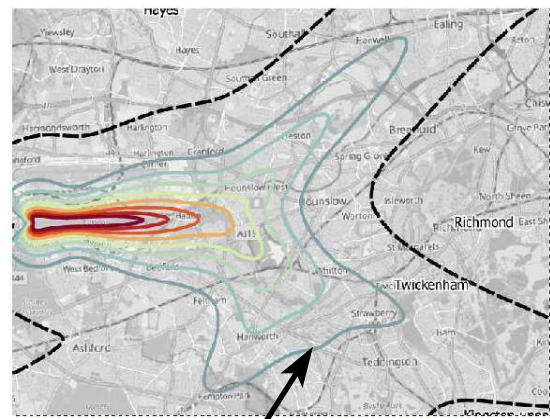


Figure 5 Dep To East Southern PBN Day 09R BaseDN

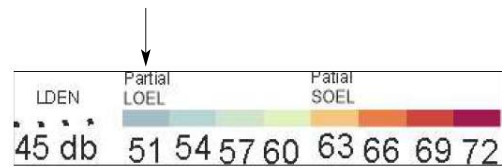


Figure 2 Heathrow Stage 2B submission to CAA July 2023 Appendix E A13.8 page 11

Correspondence between Peter Willan (Richmond Heathrow Campaign) and Heathrow regarding seeming discrepancy between Noise Action Plan Contours CAP 2001 page 69 and Base Do Nothing Case for a set of options for Departures to the East from the Southern runway 09R during the Day using PBN.

Email from Peter Willan (RHC) to Lisa Forshew and Richard West on 29 October 2023 and email response (in italics) from Lisa Forshew on 14 November 2023 - see Question 3.

1. **RHC Question:** Are these [the IOUs], including the comparative Base/do nothing case, based on a single flight event per day or traffic frequencies per day typical of summer 2019 (the base year) or some other average. I realise they are single mode?

HAL Response: The IOA is based on the average 92-summer day operations in 2019. The noise contours are not 100% single mode like the example you have provided but instead reflect the actual modal split between westerly and easterly operations.

2. **RHC question:** In the case of the easterlies and the introduction of departures from the northern runway (09L) and arrivals on the southern runway (09R) resulting from removal of the Cranford Agreement restrictions, I presume alternation is introduced and the flight frequencies for modelling purposes use of the frequencies in 2019 for 09L arrivals and 09R departures which are halved and instead taken on board by 09R arrivals and 09L departures. But this assumes traffic frequencies rather than single flight.

HAL Response: The number of departures and their distribution across the different Standard Instrument Departures (SIDs) from runway 09R in 2019 (for a 92-summer day period) was used to assess options for future 09L departures from the northern runway. The full number of easterly departure movements was used when assessing departures from both 09L and 09R (i.e. they were not halved) to ensure a more accurate assessment of the flight path options compared with the baseline. The same approach was taken when assessing options for future arrivals to runway 09R. If we split the movements across the two runways to account for easterly alternation, the 09L departure options (and the 09R arrival options) would not have been fairly compared with the baseline due to the very low number of movements from 09L (or to 09R) in 2019.

3. **RHC Question:** I have another question which is attached. Put simply, the contour maps and population noise exposure numbers submitted by Heathrow to the CAA seem substantially under-estimated. This is demonstrated by the case of the easterlies departures during the day from the southern runway (09R) illustrated in the attachment. The actual 57 dB contour for summer 2019 as in CAP 2001 is the 51 dB contour submitted to the CAA for the 2019 base case. Also, the actual population numbers in Cap 2001 for 2019 are substantially greater than in the submission to the CAA. There may be a perfectly good explanation but on the face of it the seeming discrepancy spread across all the options would be a major problem and a cursory examination suggests this is indeed the case.

HAL Response: I can confirm that our noise contours differ to those show in Figure B6 of ERCD Report 2001 because our contours show:

- a) *Single direction operations (just departures in the case of Figure 2 in your note) and,*
- b) *Average easterly/westerly split (i.e. easterly routes only in use ~30% of the time).*

Conversely, Figure B6 in the ERCD Report assumes 100% use of easterly operations (this is explained in paragraph 3.10 of the ERCD report) which would lead to a greater number of people being within the higher noise contours.

We calculated population numbers and contours for 100% operation of both easterlies and westerlies (single mode) and can assure you that our results are more closely aligned with those in the ERCD report. However, at this early stage of the process we only shared the results for average route use. A range of different noise contours will be shared at public consultation once we have undertaken the Full Options Appraisal at Stage 3.

The issue was raised again in March and April 2024 as follows:

Peter Willan requested he raise the issue at the NACF on 20 March 2024 in an email to the Chair Andreas Lambrianou dated 19 March but the Chair responded in an email dated 20 March saying *‘With regards to the additional slides I suggest that you write directly to the airspace modernisation team on this, or I can if you wish forward this on for a response. We will not have time for a response at the forum and of course it make time for them to prepare one.’*

Peter Willan wrote in an email dated 11 April 2024 to Natalie Wallis saying *‘at the last NACF meeting on 20 March I had wanted to raise a question regarding the option analysis but this was not possible at the meeting but I did discuss the issue with Heathrow afterwards and left you with a hard copy of the slide I attach here. I have had no response yet from Heathrow and would appreciate learning the outcome. In an email dated 11 April 2024 Lisa Forshew said ‘I wasn’t able to be at the last NACF, but I see that your query relates to noise contours and population numbers. I think this question was answered in November via email (see attached) but do let us know if this is a separate query.’*

At the virtual Heathrow workshop on 16 April 2024 for Heathrow’s re-submission to the CAA, Peter Willan requested the flight frequencies for each of the options and again after the CISHA open forum meeting on 18 April he asked Jenni Sykes for the flight frequencies. There has been no response from Heathrow as of 24 April 2024.