Robin Hood Airport Doncaster Sheffield (RHADS) Airspace Change Proposal - Environmental Report For DAP

Introduction

1. This paper describes the environmental considerations relevant to the proposed Robin Hood Airport Doncaster Sheffield (RHADS) Airspace Change. The proposal has been submitted by RHADS.

Guidance to DAP

2. Guidance issued to the Civil Aviation Authority[1] sets out a framework within which DAP operates in discharging air navigation functions. This guidance states that changes to airspace arrangements should be made after consultation, only where it is clear that an overall environmental benefit will accrue or where airspace management considerations and the overriding need for safety allow for no practical alternative.

3. It confirms that Government policy continues to focus on minimising over-flight of more densely populated areas with aircraft operating below 7,000 feet. However, when it is possible to avoid over-flight of National Parks and AONBs below this altitude without adding to environmental burdens on more densely populated areas, it clearly makes sense to do so. The Government's aim is to give stronger protection to the most valued landscapes in designated National Parks and AONBs. However, Government policy[2] does not preclude over-flight of National Parks or AONBs, as it is often impractical to do so.

Airspace Design

Rationale for the Airspace Change

4. The introduction of Class D airspace, replacing existing Class G airspace, is for operational reasons rather than environmental.

Nature of the Airspace Change

5. The introduction of Class D will enable changes to be made to departure routes from the airport. However, arrival routes and the hold are not subject to any changes, and therefore have not been assessed within this report. This report also assumes that all of the proposed changes to departure routes would be implemented (if that is the decision) as a whole, and therefore consideration of the impact of the proposal has been made that basis.

6. The environmental assessment submitted with the proposal concludes that the airspace change is environmentally neutral (paragraph 9.14.1). This conclusion is based upon expected noise benefits through the use of CDAs, reduced track mileage due to fewer re-routings, and a net balance between any increase in populations overflown by a decrease in other populations overflown.

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[1] DTLR, Guidance to the Civil Aviation Authority on Environmental Objectives relating to its Air Navigation Functions, January 2002

[2] National Parks and Access to the Countryside Act 1949, Planning Policy Guidance (PPG) 7 – The Countryside and the Economy and PPG 24 – Planning and Noise

Options for the Airspace Change

7. Section 3 of the formal proposal sets out three options that were considered by RHADS. The same three options were set out in the consultation documentation. These options were:

- Do nothing
- Arrangements with airspace users
- Establish Class D Airspace

8. It is not clear from the analysis of options in the proposal whether environmental factors were considered when weighing up the possible benefits and disadvantages of each one, and so no comment is made in this regard in this report. However, it is arguably possible to compare the “Do Nothing” option (i.e. pre-implementation) with the “Establish Class D Airspace” option (i.e. post-implementation) for noise impact as this has been provided as part of the proposal. The noise impact is considered later in this report.

Environmental Assessment and CAP 725

9. RHADS has provided an environmental assessment in support of its proposal. As the consultation process was initiated in 2006, the assessment does not meet all of the environmental requirements set out in the latest version of CAP 725, which was published in March 2007. The most notable exclusion is an emissions assessment, though most other current CAP 725 requirements have been satisfied by the RHADS assessment.

Noise

10. The noise impact assessment was prepared by Bickerdike Allen Partners (BAP) on behalf of RHADS. BAP used INM 6.2 to model the noise impact as this was the latest version available at the time; a more recent version on INM is now available. The assessment includes L_{eq} contours, used as an indicator for the onset of significant community annoyance, and SEL footprints, used as an indicator for possible sleep disturbance.

11. Both the L_{eq} contours and SEL footprints have been assessed by the CAA and are satisfactory.

L_{eq} Contours

12. The proposal includes $L_{eq\ 16\ hour}$ contours for pre-implementation traffic (summer 2006), immediate post-implementation traffic (summer 2006) and forecast traffic for summer 2014.

13. The results (Table 9-7 in the proposal) show a small increase in population within the 57 dB(A) contour immediately following implementation (from 214 to 257) and almost no change in area. The contours for 2014 increase significantly, due to the expected increase in flights and a change in the type of aircraft using the airport (i.e. a greater proportion of larger aircraft). The modelling results predict that there will be 1,103 residents within the 57 dB(A) contour, plus 530 and 196 residents within the 60 dB(A) and 63 dB(A) contours respectively.

14. Whilst acknowledging that the proposal identifies safety improvement as a key reason for proposing the airspace change, the proposal also notes that a safer environment is expected to make the airport a more attractive option for airlines to use, resulting in economic growth. Though not stated, the implication is that without the introduction of Class D, traffic at the airport would not grow as rapidly. This

could have been illustrated by including a L_{eq} analysis for 2014 that assumes the proposed changes are not implemented, but this has not been undertaken by RHADS.

SEL Footprints

15. The proposal advises that whilst there are restrictions on the number of aircraft that operate at night (between 2300 and 0700) at the airport, and that RHADS has implemented a Noise Charging Policy that penalises departing aircraft that contravene agreed noise levels, there will still be night flights. This will mean that there is the possibility that these flights will cause sleep disturbance for those residents closest to the departure routes.

16. CAP 725 requires SEL footprints to be produced at two levels, 90 dB(A) and 80 dB(A). 90 dB(A) is accepted as the noise level below which it is unlikely that noise events will cause any measurable increase in overall rates of sleep disturbance. SEL footprints were included in the proposal material submitted to the CAA, but were not included in the consultation material.

17. SEL footprints at both 90 dB(A) and 80 dB(A) were modelled for aircraft that depart at night as follows:

- the most frequent current aircraft (Boeing 737-300)
- the noisiest current aircraft during the night (Boeing 737-300)
- the most frequent future aircraft (Boeing 737-300)
- the noisiest future aircraft (Boeing 767-400).

18. The proposal sets out the average number of departures at night for each of these aircraft based upon actual flight numbers for the summer of 2006, and forecast flight numbers for the summer of 2014. These can be summarised as:

		737-300 Summer 2006	**737-300 Summer 2014**	**767-400 Summer 2014**
Current Departure Routes	02 ROGAG	0.4	N/A	N/A
	02 GOLES	0.6	N/A	N/A
	20 GOLES West	0.3	N/A	N/A
	20 GOLES East	0.5	N/A	N/A
Proposed Departure Routes	UPTON 1C	0.6	1.1	0.3
	ROGAG 1C	0.4	0.7	0.2
	UPTON 1A	Less than 0.1	Less than 0.1	Less than 0.1
	UPTON 1B	0.5	1.0	0.3
	ROGAG 1A	0.3	0.6	0.2

19. Using the analysis provided by RHADS with the proposal, the above averages can be put into context by comparing them with the total average number of night departures (for all aircraft) for both summer 2006 (2.4 departures each night) and summer 2014 (7.9 departures each night).

20. Traffic is busiest during the summer months, and so the average number of night departures is likely to be less for the other months of the year.

21. The noise modelling allows a comparison to be made between the current routes and the proposed new departure routes in terms of both area and population. These are considered individually below, and a summary of the modelled SEL footprints from BAP can be found at Appendix 1.

22. In addition to using SEL footprints to illustrate the potential effect on sleep disturbance, it is possible to use the footprints to compare the number of people overflown before and after implementation.

Runway 02 – ROGAG

23. Aircraft using this current departure route turn east after leaving the airport. The proposal replaces this route with ROGAG 1C, which also turns east after leaving the airport but on a much tighter turn. Both the current and the proposed route account for an estimated 21% of departures. Whilst the population count within the 90 dB(A) SEL footprint shows a very small reduction for the new route, the population count within the 80 dB(A) SEL footprint shows a much more significant reduction for the new route. This is largely due to the new route having a tighter turn on leaving the airport, which means that whereas the current route overflies Hatfield Prison and its surrounding buildings, the new route will not. The new route also overflies less of Hatfield Moors.

24. Instead, the new route will take aircraft much closer to the villages of Wroot and Woodside. Neither village is within the 80 dB(A) SEL footprint for the 737-300, but both are within the 80 dB(A) SEL footprint for the 767-400. It is likely that residents will experience an increase in aircraft noise when this departure route is used.

Runway 02 – GOLES

25. Aircraft using this current departure route turn west after leaving the airport. The proposal replaces this route with UPTON 1C, which also turns west after leaving the airport on an identical heading. Both the current and the proposed route account for an estimated 32% of departures. There is no change in population count as the routes are identical up to at least the 80 dB(A) SEL boundary.

Runway 20 – GOLES West

26. Aircraft using this current departure route turn west after leaving the airport. Currently, departures that use this route are infrequent. The proposal replaces this route with UPTON 1A, which also turns west after leaving the airport on an identical heading. The estimated level of departures using this new route is 29%.

Runway 20 – GOLES East

27. Aircraft using this current departure route turn east after leaving the airport. Currently, 29% of departures are estimated to use this route. The proposal replaces this route with UPTON 1B, which also turns east after leaving the airport on an identical heading. The estimated level of departures using this new route is infrequent.

28. Comparing the two routes outlined above (GOLES West & GOLES East), it can be seen that the predominant route from Runway 20 currently departs to the east to GOLES, but the proposal shows that the predominant route will become UPTON 1A which departs to the west.

29. The impact of replacing the existing GOLES East and GOLES West departures with two new departures (UPTON 1A and UPTON 1B) is mixed. The population count within the 90 dB(A) SEL footprint shows a small increase for the 737-300 only,

whilst the population count within the 80 dB(A) SEL footprint shows a decrease for the 737-300 (less of Bawtry is captured within the proposed footprint) yet the 80 dB(A) SEL footprint for the 767-400 shows an increase of 3,200 (the larger footprint extends over part of Harworth and Tickhill).

Runway 20 – ROGAG

30. Aircraft using this current departure route turn east after leaving the airport, taking an initial route that is the same as GOLES East. Currently, 18% of departures are estimated to use this route. The proposal replaces this route with two routes. The first is ROGAG 1B; whilst this has the same initial route as the current departure, it is estimated that it will only be used for less than 1% of departures. The second new route is ROGAG 1A. This route departs Runway 20 on initial track that is the same as UPTON 1A, but then turns south-east at Harworth. The estimated level of departures using this new route is 17%.

31. The impact of replacing the existing ROGAG departure with two new departures (ROGAG 1A and ROGAG 1B) could be considered to have a detrimental noise impact. Whilst the population count within the 90 dB(A) SEL footprint is unchanged for the 767-400, there is a small increase for the 737-300. The largest impact is on the population count within the 80 dB(A) SEL footprint which shows an increase for both the 737-300 and the 767-400.

32. In broad terms, whilst the majority of current departures from Runway 20 turn eastwards upon departure, the proposal will introduce routes which mean that the majority of departures from Runway 20 will take an initial south-west track. This represents a redistribution of noise.

General Conclusions on Population Overflown

33. The new departures from Runway 02 will result in a reduction in population overflown based upon the 80 dB(A) SEL footprints. This is largely due to no longer overflying Hatfield Prison.

34. The two most often used current departure routes from Runway 20 (GOLES East & ROGAG) follow the same initial track, and therefore it is the same populations overflown for both of these current routes. Hence the current population counts for these existing routes are the same. Both of these routes depart to the east of the airport.

35. The two most often used proposed departure routes from Runway 20 (UPTON 1A & ROGAG 1A) will follow the same initial track for a shorter distance, and then separate. Therefore, of the population that will be overflown, those closest to the airport will be beneath both routes, whilst those further away will only be beneath one or other. Hence the forecast population counts for each route is the same at 90 dB(A) SEL, but different at 80 dB(A) SEL. Both of these routes depart to the west of the airport.

36. There will be a redistribution of noise from departing aircraft from the south-east area near the airport to the south-west area near the airport. Therefore, regardless of the population count overflown, those residents close to the south-west of the airport are likely to experience an increase in noise whilst those the south-east are likely to experience a reduction.

37. Accepting that the populations beneath each departure route from Runway 20 are not discrete (i.e. there is some element of double-counting because the routes share part of the same track) and that this makes a definite population comparison impossible, there would appear to be an increase in the total number of people

overflown based on the 80 dB(A) SEL footprint if the proposed change is implemented.

38. Combining the impact of the changes to both Runway 02 and Runway 20 departure routes based on 80 dB(A) SEL, then for the most frequent aircraft (737-300) the net effect on population count is a reduction. For the future noisiest aircraft (767-400), the net effect on population count is an increase because this aircraft has a larger footprint that encompasses residences that are outside the footprint for the 737-300.

39. It is therefore difficult to determine, using the 80 dB(A) SEL footprints, if there will be a total increase or decrease in the population overflown as a result of this proposal. However, some assurance can be taken from the results that show that the populations most likely to be effected by noise (i.e. those within the 90 dB(A) SEL footprint and those within the $57L_{eq}$ contour) are largely unchanged immediately after implementation.

Other Noise Impacts

40. Paragraph 7.2.8 of the proposal document states that "It is recognised that some traffic which transits current Class G airspace uninhibited at present might choose to avoid the CAS (Controlled Airspace) rather than seek a crossing clearance. This could result in slightly longer flight paths and incur additional fuel cost for the extra track miles flown, especially if crossing on an east-west axis; however, there is no recognised method to judge the impact in cost terms. RHADS will facilitate direct routings". The same conclusion can be made with regards to the potential noise impact from GA aircraft that may choose to fly a different route rather than cross the proposed CAS. It is reasonable to recognise that GA may choose to fly around the new airspace, and thereby overfly areas that they would not have done previously, and that this may result in aircraft noise being heard on the ground in areas that it was not previously. However, there is no realistic and objective means for trying to assess this possible impact.

Traffic Forecasts

41. The total Summer daytime air traffic movements for 2006 were 2,663, and the forecast daytime Summer air traffic movements for 2014 are 12,351. This represents an increase of 364% over eight years. The airport has not published a Master Plan against which this forecast growth can be compared. The forecasts were prepared by RHADS by an external provider, RDG Solutions, but no other information (such as assumptions) is provided.

Emissions

42. There was no emissions analysis in the consultation or proposal documentation as this was not a specific requirement of CAP 725 at the time of the original consultation. The proposal assert that by implementing CAS around the airport, aircraft will be able to operate in a known environment, and therefore the need to change flight path in order to avoid another aircraft is likely to be reduced. It is argued that this will result in better flight profiles and less deviations from optimum flight paths. However, on the counter side to this assertion, it also appears that some of the proposed routes may increase track mileage, e.g. ROGAG 1C, ROGAG 1A. Therefore, in the absence of an emissions assessment (because it was not required) means that no conclusions can be made about the possible impact upon emissions.

Continuous Descent Approaches (CDAs)

43. CDAs are not currently in use at RHADS. The proposal states that the introduction of CAS will facilitate the introduction of CDAs at the airport, but there is no commitment from RHADS that this will be undertaken. Without this commitment, and therefore any assessment of their potential benefit as part of this proposal, it would be unreasonable to attribute benefit to their possible introduction when considering the various environmental impacts of this airspace change.

44. It is recommended that, if the proposal is implemented, use of CDAs at RHADS is monitored and assessed as part of the post-implementation review in order to gauge what steps have been taken to introduce CDAs, and if they have been introduced, to assess the compliance rate.

Tranquillity

45. The means of measuring tranquillity are still being developed. The white paper on the countryside[3] notes that 'it is not just its physical features which give the countryside its unique character: there are less tangible features such as tranquillity and lack of noise and visual intrusion, dark skies and remoteness from the visible impact of civilisation'. It goes on to state that there will always be sources of noise in the countryside and many of these are representative of activities which have long been central to the rural way of life. However, it states that protecting the countryside from further intrusion is not a luxury and cites the need to preserve and promote a feature that is genuinely valued by residents and visitors alike. The white paper admits that there is no agreed method to measure whether the quality of the countryside is being maintained.

46. Two studies published by CPRE include relative tranquillity maps. The first of these was for a national park[4] and the second for all of England[5]. In the first study, the methodology employed applied a negative weighting factor of 1.5% for aircraft noise. (This can be compared with the leading negative factor – "The presence of other people" – which had a weighting of 60%.) The second study did not identify weightings, but instead drew up a list from survey responses of the top eight factors that lessen tranquillity; within this list "seeing low flying aircraft" and "hearing low flying aircraft" were ranked as 6 and 7 respectively. (The highest ranked negative factor was "Hearing constant noise from cars, lorries and/or motorbikes".) The study did not provide a definition of "low flying".

47. Until such time as a definitive measure of tranquillity is accepted, it is safest to acknowledge that being able to hear an aircraft may be enough to have an impact upon tranquillity for some people, but for others it will not. Factors such as noise levels and frequency are likely to affect the impact and therefore the number of people that would consider tranquillity to be degraded. As noted earlier in this report, the change in departure routes is likely to mean that some residents closer to the airport will be aware of an increase in aircraft and an increase in noise. To that extent, it is reasonable to conclude that tranquillity may be degraded for some people, but that tranquillity may also be improved for others.

Visual Intrusion

48. There would seem to be no agreed definition of visual intrusion but, for the purposes of this report, it is assumed that the ability to detect the presence of aircraft

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[3] DETR, Our countryside: the future: A fair deal for rural England, November 2000
[4] CPRE/Countryside Agency, Mapping Tranquillity – Northumberland National Park and West Durham Coalfield, March 2005
[5] CPRE, Saving Tranquil Places – How to Protect and Promote a Vital Asset, October 2006

visually will suffice. Alternative definitions might consider the impact of visual sighting such as to cause annoyance or spoil the intrinsic quality of the countryside but alternative definitions are beyond the scope of this report.

49. The proposal includes both changes to departure routes and, in some instances where the initial stage of the route is not changing, changes to the frequency of usage (notably the departures from Runway 20). Some of these changes are likely to result in aircraft flying closer to some locations than previously (e.g. Wroot) or flying with greater frequency near other locations (e.g. Harworth).

50. It is therefore reasonable to conclude that, as the proposal represents a redistribution of departures, it is likely that aircraft will be sighted more often in some areas if the proposal is implemented. It is also reasonable to conclude that, all other things being equal, aircraft will be sighted with less frequency in those locations that will be overflown less frequently by departing aircraft. It is not possible to measure to what extent any visual intrusion will be increased or decreased as a result of the proposal, or what the net impact on visual intrusion might be.

Local Air Quality

51. No assessment of the possible impact upon Local Air Quality was undertaken as there are no Air Quality Management Areas declared for either the airport or the areas around the airport.

52. For this reason, the CAA is satisfied that no assessment of LAQ is required.

Biodiversity

53. It is not considered likely that there will be any direct effect on biodiversity as the result of this airspace change. However, this does not exclude the possible impact upon biodiversity as a result of global climate change that may be contributed to by growth in aviation; consideration of these second order effects is beyond the scope of this report.

Impacts Upon AONBs and National Park

54. The new departure routes will not newly overfly any Areas of Outstanding Natural Beauty or National Parks. Whilst it is neither an AONB nor a National Park, the existing and proposed easterly departures from Runway 02 overfly part of Hatfield Moors SSSI. The current route (ROGAG 02) overflies the northern part of the Moors; the proposed route (ROGAG 1C) will overfly the southern part of the Moors, but to a lesser extent. It is therefore reasonable to conclude that fewer departing aircraft will be seen or heard over Hatfield Moors if the proposal is implemented.

55. Regardless of this conclusion, it is noted that the Thorne & Hatfield Moors Conservation Forum was not amongst the consultees for this proposal.

Consultation Responses

56. Only one objection was received from consultees on environmental grounds. This relating to the noise impact for the village of Wroot. RHADS undertook correspondence with this consultee and explained the impact to the extent that that the initial objection was retracted.

57. Two other responses were received with further questions relating to the environmental impact. These were addressed by RHADS.

Conclusions

58. Based upon L_{eq} contours, the noise impact immediately after implementation is not significantly different from the post-implementation situation. The forecast position (in 2014) shows an increase in population that are likely to be annoyed by aircraft noise. This increase is due to both an increase in departures from the airport and larger aircraft using the airport. The implication from the proposal is that this growth is at least partly due to the introduction of Class D airspace.

59. Based upon the SEL footprints and the frequency of departures at night, there is unlikely to be an increase in sleep disturbances as a result of the airspace change.

60. Based upon the 80 dB(A) SEL footprints, it cannot be determined if there is a net increase or decrease in the populations overflown. Some assurance can be taken from both the 90 dB(A) SEL footprints and 57 $L_{eq\ 16\ hours}$ contours that there will be no significant increase in those most effected by the noise impact. However, it can also be seen that there will be redistributions of the noise impact, particularly to the south of the airport and therefore some residents will experience an increase in noise from departing aircraft whilst others will experience a reduction.

61. SEL footprints were not included in the consultation and therefore were not available to consultees. This may have limited consultees' ability to understand the impact of the change in departure routes.

62. The impact upon fuel burn and emissions was not assessed and therefore no conclusions can be made about this element of the environmental impact.

63. There is unlikely to be a significant impact upon Local Air Quality as a result of the proposed change following implementation.

64. Both tranquillity and visual intrusion may be affected to a some extent, but it is not possible to measure to what extent. Some people are likely to experience a negative impact, whilst others may experience a positive impact.

65. There is unlikely to be a direct impact upon biodiversity as a result of the proposed change.

66. Taking all of the above into account, it is not possible to substantiate the conclusion reached by the proposer that the airspace change would be environmentally neutral. Equally, it is not possible to conclude that there is a net environmental benefit. In essence, the change represents a redistribution of departing aircraft, and some residents will benefit from this whilst others are likely to experience an increase in noise and sightings. The one aspect that can be determined with a greater degree of certainty is that the numbers of those *most* effected are not likely to increase significantly upon implementation.

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22 May 2008

APPENDIX 1 – Summary of SEL footprints

Population Counts for Boeing 737- 300 (noisiest and most frequent current aircraft)

Runway	Existing departure route	Distribution	Population in SEL Contour		SEL Contour Area (km^2)		Proposed departure route	Proposed distribution	Population in SEL Contour		SEL Contour Area (km^2)	
			90 dBA	**80 dBA**	**90 dBA**	**80 dBA**			**90 dBA**	**80 dBA**	**90 dBA**	**80 dBA**
02	GOLES	32%	65	1,600	2.18	15.97	No change (renamed UPTON 1C)	32%	65	1,600	2.18	15.97
	ROGAG	21%	65	3,300	2.19	16.16	"Revised" - to ROGAG 1C	21%	58	2,000	2.18	16.06
20	GOLES East	29%	117	4,200	2.18	16.13	UPTON 1A (GOLES East retained but used infrequently, and renamed UPTON 1B)	29%	127	3,900	2.18	16.02
	GOLES West	Infrequent										
	ROGAG	18%	117	4,200	2.18	16.13	ROGAG 1A	17.1%	127	4,700	2.18	16.14
							ROGAG 1B	0.9%	117	4,200	2.18	16.13

Departures will be from Runway 02 (53%) and Runway 20 (47%).

Departures from 02 are an improvement in terms of numbers overflown due entirely to changes in ROGAG ("ROGAG 1C").

Changes in departures from 20 show a mixture of improvements and deteriorations in numbers overflown:

- Replacing "GOLES East" and "GOLES West" with "UPTON 1A" increases the numbers within the 90 dB(A) footprint, but reduces the numbers within the 80 dB(A) footprint.
- Replacing (for most of the time) "ROGAG" with "ROGAG 1A" increases both the numbers within the 90 dB(A) footprint and the 80 dB(A) footprint.

Population Counts for Boeing 767- 400 (noisiest future aircraft)

Runway	Existing departure route	Distribution	Population in SEL Contour		SEL Contour Area (km^2)		Proposed departure route	Proposed distribution	Population in SEL Contour		SEL Contour Area (km^2)	
			90 dBA	80 dBA	90 dBA	80 dBA			90 dBA	80 dBA	90 dBA	80 dBA
02	GOLES	32%	593	5,000	4.82	30.13	No change (renamed UPTON 1C)	32%	593	5,000	4.82	30.13
	ROGAG	21%	609	5,100	4.83	30.28	“Revised” - to ROGAG 1C	21%	654	3,800	4.82	30.51
20	GOLES East	29%	416	7,200	4.83	30.55	UPTON 1A (previously called GOLES West) (GOLES East retained but used infrequently, and renamed UPTON 1B)	29%	416	10,400	4.82	30.44
	GOLES West	Infrequent										
	ROGAG	18%	416	7,200	4.83	30.55	ROGAG 1A	17.1%	416	9,000	4.82	30.60
							ROGAG 1B	0.9%	416	7,200	4.83	30.55

Departures will be from Runway 02 (53%) and Runway 20 (47%).

Departures from 02 show an increase in numbers overflown for the 90 dB(A) footprint, but an improvement in terms of numbers overflown within the 80 dB(A) footprint due entirely to changes in ROGAG (“ROGAG 1C”).

Departures from 20 show a mixture of improvements and deteriorations in numbers overflown:

- Replacing “GOLES East” and “GOLES West” with “UPTON 1A” has no change to the numbers within the 90 dB(A) footprint, but increases the numbers within the 80 dB(A) footprint.
- Replacing (for most of the time) “ROGAG” with “ROGAG 1A” has no change to the numbers within the 90 dB(A) footprint but increases the numbers within the 80 dB(A) footprint.

DIMENSIONS AND DESIGN OF CLASS D CONTROLLED AIRSPACE IN THE VICINITY OF ROBIN HOOD AIRPORT DONCASTER SHEFFIELD AIRPORT

Summary of Changes

A. Class D CTR designated as DONCASTER SHEFFIELD CTR-1, an area bounded by the co-ordinates 533432N 0010603W thence clockwise by the arc of a circle radius 6.5nm centred on 532911N 0005954W to 533137N 0004948W - 532720N 0005206W - 533119N 0010614W - 533109N 0010751W - 533432N 0010603W rising from the surface to FL85.

B. Class D CTR designated as DONCASTER SHEFFIELD CTR-2, an area bounded by the co-ordinates 533109N 0010751W - 533119N 0010614W - 532720N 0005206W - 532223N 0005445W thence anti-clockwise by the arc of a circle radius 6.5nm centred on 532751N 0010036W to 532535N 0011047W - 533109N 0010751W rising from the surface to FL105.

C. Class D CTA designated as DONCASTER SHEFFIELD CTA-1, rising from 1500 ft altitude to FL85 and bounded by the co-ordinates 533635N 0010457W thence clockwise by the arc of a circle radius 8nm centred on 532911N 0005954W to 533336N 0004844W - 533137N 0004948W thence anti-clockwise by the arc of a circle radius 6.5nm centred on 532911N 0005954W to 533432N 0010603W - 533635N 0010457W.

D. Class D CTA designated as DONCASTER SHEFFIELD CTA-2, rising from 1500 ft altitude to FL105 and bounded by the co-ordinates 532527N 0011228W - 532535N 0011047W thence anti-clockwise by the arc of a circle radius 6.5nm centred on 532751N 0010036W to 532223N 0005445W - 532024N 0005549W thence clockwise by the arc of a circle radius 8nm centred on 532751N 0010036W to 532401N 0011220W - 532527N 0011228W.

E. Class D CTA designated as DONCASTER SHEFFIELD CTA-3, rising from 2000 ft altitude to FL60 and bounded by the co-ordinates 531858N 0011152W - 531600N 0005542W - 531509N 0005610W thence clockwise by the arc of a circle radius 13nm centred on 532751N 0010036W to 531641N 0011139W - 531858N 0011152W.

F. Class D CTA designated as DONCASTER SHEFFIELD CTA-4, rising from 2000 ft altitude to FL65 and bounded by the co-ordinates 5534139N 0010352W - 534149N 0010209W - 533109N 0010751W - 533059N 0010932W - 534139N 0010352W.

G. Class D CTA designated as DONCASTER SHEFFIELD CTA-5, rising from 2000 ft altitude to FL85 and bounded by the co-ordinates 534149N 0010209W thence clockwise by the arc of a circle radius 12.7nm centred on 532911N 0005954W to 533741N 0004403W - 532643N 0004958W - 532720N 0005206W - 533336N 0004844W thence anti-clockwise by the arc of a circle radius 8nm centred on 532911N 0005954W to 533635N 0010457W - 534149N 0010209W.

H. Class D CTA designated as DONCASTER SHEFFIELD CTA-6, rising from 2000 ft altitude to FL105 and bounded by the co-ordinates 532401N 0011220W thence anti-clockwise by the arc of a circle radius 8nm centred on 532751N 0010036W to 532024N 0005549W - 532720N 0005206W - 532643N 0004958W - 531600N 0005542W - 531858N 0011152W - 532401N 0011220W.

I. Class D CTA designated as DONCASTER SHEFFIELD CTA-7, rising from 2000 ft altitude to FL105 and bounded by the co-ordinates 533059N 0010932W - 533109N 0010751W - 532535N 0011047W - 532527N 0011228W - 533059N 0010932W.

J. Class D CTA designated as DONCASTER SHEFFIELD CTA-8, rising from 4000 ft altitude to FL65 and bounded by the co-ordinates 534030N 0011550W - 534139N 0010352W - 533059N 0010932W - 533038N 0011307W - 534030N 0011550W.

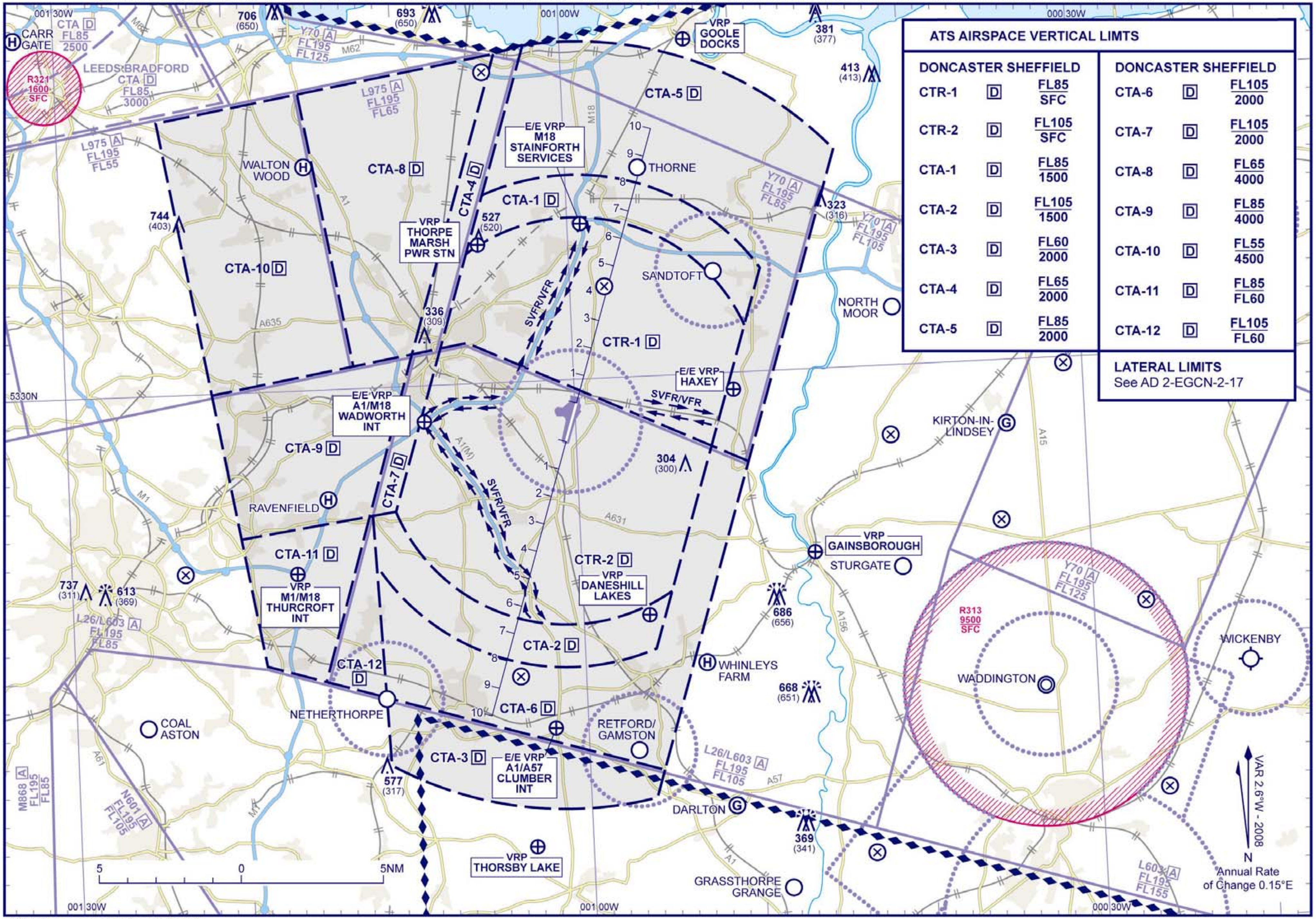
K. Class D CTA designated as DONCASTER SHEFFIELD CTA-9, rising from 4000 ft altitude to FL85 and bounded by the co-ordinates 532950N 0012120W - 533059N 0010932W - 532527N 0011228W - 532449N 0011957W - 532950N - 0012120W.

L. Class D CTA designated as DONCASTER SHEFFIELD CTA-10, rising from 4500 ft altitude to FL55 and bounded by the co-ordinates 533941N 0012405W - 534030N 0011550W - 533038N 0011307W - 532950N 0012120W - 533941N 0012405W.

M. Class D CTA designated as DONCASTER SHEFFIELD CTA-11, rising from FL60 to FL85 and bounded by the co-ordinates 532449N 0011957W - 532527N 0011228W - 531938N 0011532W - 532012N 0011840W - 532449N 0011957W.

N. Class D CTA designated as DONCASTER SHEFFIELD CTA-12, rising from FL60 to FL105 and bounded by the co-ordinates 532527N 0011228W - 531858N 0011152W - 531938N 0011532W - 532527N 0011228W.

ROBIN HOOD AIRPORT DONCASTER SHEFFIELD CONTROL ZONES AND CONTROL AREAS EFFECTIVE 28th AUGUST 2008



ATS AIRSPACE VERTICAL LIMTS

DONCASTER SHEFFIELD			DONCASTER SHEFFIELD		
CTR-1	D	FL85 / SFC	CTA-6	D	FL105 / 2000
CTR-2	D	FL105 / SFC	CTA-7	D	FL105 / 2000
CTA-1	D	FL85 / 1500	CTA-8	D	FL65 / 4000
CTA-2	D	FL105 / 1500	CTA-9	D	FL85 / 4000
CTA-3	D	FL60 / 2000	CTA-10	D	FL55 / 4500
CTA-4	D	FL65 / 2000	CTA-11	D	FL85 / FL60
CTA-5	D	FL85 / 2000	CTA-12	D	FL105 / FL60

GLOSSARY OF TERMS

TERM	MEANING
AIAA	Area of Intense Aerial Activity. An airspace within which the intensity of civil and/or military flying is exceptionally high or where aircraft, either singly or in participation with others, regularly participate in unusual manoeuvres.
AIP	Aeronautical Information Publication
AIRAC	Aeronautical Information Regulation And Control. A publication to notify changes in aviation arrangements to interested parties in the industry.
ATC	Air Traffic Control
ATS	Air Traffic Service. A generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service or aerodrome control service).
CAA	Civil Aviation Authority
CAS	Controlled Airspace. An airspace of defined dimensions within which air traffic control service is provided in accordance with the airspace classification.
CDA	Continuous Descent Approach. A noise abatement technique for which the pilot, when given descent clearance below Transition Altitude by ATC, will at the rate he judges will be best suited to the achievement of continuous descent, whilst meeting the ATC speed control requirements, the objective being to join the glidepath at the appropriate height for the distance without recourse to level flight.
Class D	An ICAO CAS classification (of classes A-G) that permits IFR and VFR flight in accordance with specified conditions. The most common class of CAS established around airports within the UK.
Class G	The lowest of the ICAO airspace classifications (of classes A-G). that permits uncontrolled flight in accordance with specified flight rules. The most common class of airspace outside CAS and advisory airspace in the UK.
CTA	Control Area. A controlled airspace extending upwards from a specified limit above the earth to a specified upper limit.
CTR	Control Zone. A controlled airspace extending upwards from the surface of the earth to a specified upper limit.
DAP	Directorate of Airspace Policy
dBA	dBA is used to denote the levels of noise measured on an A-weighted decibel scale (ie a frequency weighting that is applied to the electrical signal within a noisemeasuring instrument as a way of simulating the way the human ear responds to a range of acoustic frequencies).
ENR	En Route (a section of the AIP)
ICAO	International Civil Aviation Organisation
IFR	Instrument Flight Rules. To be obeyed by pilots when it is not possible for an aircraft to be flown in Visual Meteorological Conditions or at night, or when operating in airspace in which IFR must be adhered to in all meteorological conditions.
NATMAC	National Air Traffic Management Advisory Committee

TERM	MEANING
NPR	Noise Preferential Route. Departure route designed for noise abatement purposes, No turns are to be commenced below a height of 500 ft above aerodrome level. Airport Operators may specify the criteria used to determine individual NPRs. These criteria are for guidance only and aircraft operators should adhere to the routes to the maximum extent practicable commensurate with the safe operation of the aircraft.
SEL	The Sound Exposure Level generated by a single aircraft at the measurement point, measured in dBA. This accounts for the duration of the sound as well as its intensity.
SID	Standard Instrument Departure. A designated IFR departure route linking the aerodrome or specified runway of an aerodrome with a specified significant point, normally on a designated ATS route, at which the en route phase of a flight commences.
STAR	Standard Arrival Route. A designated IFR arrival route linking a significant point, normally on an ATS route, with a point from which a published instrument approach procedure can be commenced.
VFR	Visual Flight Rules. Flown in accordance with the conditions stipulated at Section 5 of the Rules of the Air Regulations 1996 when not operating under IFR.
VRP	Visual Reference Point. A prominent natural or man-made features which will be readily identifiable from the air established in the vicinity of an aerodrome located within CAS in order to facilitate access to and from aerodromes located within, and transit of, CAS by VFR traffic. They may also be used to assist pilots to plan routes around CAS when traffic conditions require.