



14 June 2017

Hd AAA (through Mgr AR)

CAA CONCLUSIONS
ROBIN HOOD AIRPORT DONCASTER SHEFFIELD (RHADS)
POST IMPLEMENTATION REVIEW (PIR)

Executive Summary

1. This document contains the CAA's PIR conclusions for RHADS Class D Controlled Airspace (CAS) introduced on 31 July 2008 and includes the CAA's analysis of the effectiveness of the implementation of the Airspace Change Proposal (ACP), and a summary of the stakeholder comments received. The document also considers an updated RHADS document entitled the RHADS Feasibility and Options Report (03 Feb 2015) and subsequent discussion with RHADS, although this does not form part of the PIR conclusions.
2. The data collected since the airspace was implemented demonstrates that the ACP has achieved its stated aims with regard to protecting Commercial Air Transport (CAT) flights operating in and out of the airport; however a number of issues were highlighted in stakeholder feedback regarding size, movements, funnelling and complexity. The CAA acknowledges that a number of the comments received relate to the perceived adequacy of the ACP decision itself rather than highlighting differences in actual and anticipated benefits and impacts.
3. Taking into account all of the information and comments received, it is the CAA's regulatory conclusion that, whilst not as efficiently or flexibly designed as it might have been if the ACP decision was taken today, the Class D airspace implemented at RHADS has achieved its stated aims in the original ACP submission. Therefore there are no requirements for modification from this PIR process, and the airspace should remain as it has been since implementation on 31 July 2008.
4. The RHADS Feasibility and Options Report looked at several ways to modify or reduce the CAS at RHADS. Many of these align with the CAAs developing thinking and modern airspace design techniques. Notwithstanding this, the PIR is not an opportunity to re-assess the design criteria, but is a framework for assessing the impacts and benefits of the ACP decision and as such the options are considered separately in Annex D but do not form part of the PIR conclusions.

Introduction

5. In October 2007 the Directorate of Airspace Policy (DAP) received a formal proposal from RHADS to revise the airspace design in their vicinity through the introduction of Class D Controlled Airspace (CAS). The final proposal was received on 12 March 2008 and following CAA approval, the airspace was introduced on 31 July 2008. Annex A shows the current Controlled Airspace Area Chart.
6. In accordance with Stage 7 of the Airspace Change Process as detailed in CAP 725, a Post Implement Review (PIR) should be conducted to provide a rigorous assessment of the change by the CAA to determine if the anticipated impacts and benefits have been delivered, and if not to

ascertain why and determine the most appropriate course of action. A PIR should normally be conducted at the 12 month point following implementation, however owing to a variety of reasons, including the airspace introduction coinciding with the impacts of a global recession which significantly impacted operations at the airport, the PIR was delayed. This was intended to allow time for Commercial Air Transport (CAT) movements and passengers numbers (PAX) to recover at the airport.

7. A PIR was commenced in November 2013 and RHADS and other aviation stakeholders were invited to respond to Information Notice (IN) 2013/176 to provide their views on the implementation of the airspace change. The CAA received detailed responses from a number of stakeholders, and RHADS provided the RHADS PIR Review document dated 06 December 2013. Owing to internal CAA administrative delays, and a request from the CAA to RHADS to provide more detail in their review document, the PIR was further delayed.

8. The PIR was re-commenced in July 2015 and draft PIR conclusions dated 10 December 2015 were shared with RHADS for comment. The draft conclusions contained the CAA's analysis of the effectiveness of the implementation of the Airspace Change Proposal (ACP), and summarised the stakeholder comments received, and considered an updated RHADS document entitled the RHADS Feasibility and Options Report dated 03 February 2015. The CAA subsequently received from RHADS a significant number of comments on the draft PIR report. Since this time there has been ongoing discussion with RHADS which has coincided with a period of significant growth at the airport. The CAA has also recently received further comments from Leeds Bradford International Airport (LBIA), and a further document from RHADS entitled RHADS PIR – Review of SARG Options, 20 September 2016. All of the comments, feedback and information received to date, including those received since the draft PIR conclusions were written and shared with RHADS for comment, have been taken into account in reaching the conclusions contained in this review.

Background

9. RHADS commenced commercial operations in April 2005, operating in Class G airspace with an Aerodrome Traffic Zone (ATZ) to afford protection to aircraft. In the local vicinity there are numerous airfields, parachuting, gliding and microlight sites, and the airspace is a busy training area for military low level flying. Against a background of continued and forecast growth in CAT and PAX, the ACP was submitted.

Key Objectives

10. The ACP looked to introduce Control Zones (CTRs) and Control Areas (CTAs) to maintain a high standard of safety and, where possible, enhance flight safety, improve the operations of airspace users to and from the airport, reduce air traffic controller workload and interactions, and minimise the environmental impacts of these operations upon local communities. Specifically it sought to enhance safety by protecting CAT in the critical departure and arrival phases of flight through containment of procedures within controlled airspace.

11. There was a known issue with CAT operating in the then Class G airspace coming into conflict with unknown traffic, particularly in areas of flight perceived as high risk such as climb-out and arrival. A significant factor in the justification for the CTRs in particular were the numbers of AIRPROX involving CAT in the vicinity of the airfield since commercial operations had begun, including one Category B¹ assessment. Figure 1 shows the number of AIRPROX reports occurring in the vicinity of RHADS by year.

12. The operations of airspace users to and from the airport and air traffic controllers were sought to be improved through the introduction of Standard Instrument Departure procedures (SIDs) and Standard Arrival Routes (STARs). Instrument Approach Procedures as published in the Aeronautical Information Publication (AIP) remained unchanged. Environmental benefits were

¹ UK AIRPROX Board Category B Definition: Avoiding action may have been taken but still resulted in safety margins being much reduced below normal – safety not assured.

hoped to be attained, and Planning Permission constraints adhered to, from the predictability of the SIDs by a greater adherence to Noise Preferential Routes (NPRs) which could be afforded by the creation of a 'known traffic environment'. The proposal also looked to improve opportunities for pilots to apply Continuous Descent Approach (CDA) techniques within controlled airspace.

Data Collected Since the Change has been Implemented and Operational

Air Traffic Management Impact

13. The airspace is managed 24 hours a day, 7 days a week by radar controllers at Liverpool John Lennon Airport (LJLA). In addition to radar controlling arriving and departing aircraft, this facilitates a crossing service where possible to other airspace users.

14. The introduction of SIDs and STARs undoubtedly reduces controller workload, planning complexity for pilots and delivers operational benefits to airports users to and from the airport. Delays are unusual owing to the design and construct meaning all routes are contained within the confines of Class D airspace. A crossing service and measures to assist other airspace users in accessing the airspace were put in place. Numerous Letters of Agreement (LoAs) with neighbouring airfields and airspace users have been agreed in an attempt to maintain a Flexible Use of Airspace (FUA). These include LoAs with local units and glider corridors and soaring boxes. We note below that there have been no logged refusals from implementation on 31 July 2008 to when the RHADS Feasibility and Options Report was published on 03 February 2015.

Impact of Change

15. **Airprox Reports.** Filed Airprox reports before and after Class D implementation are in the table below.

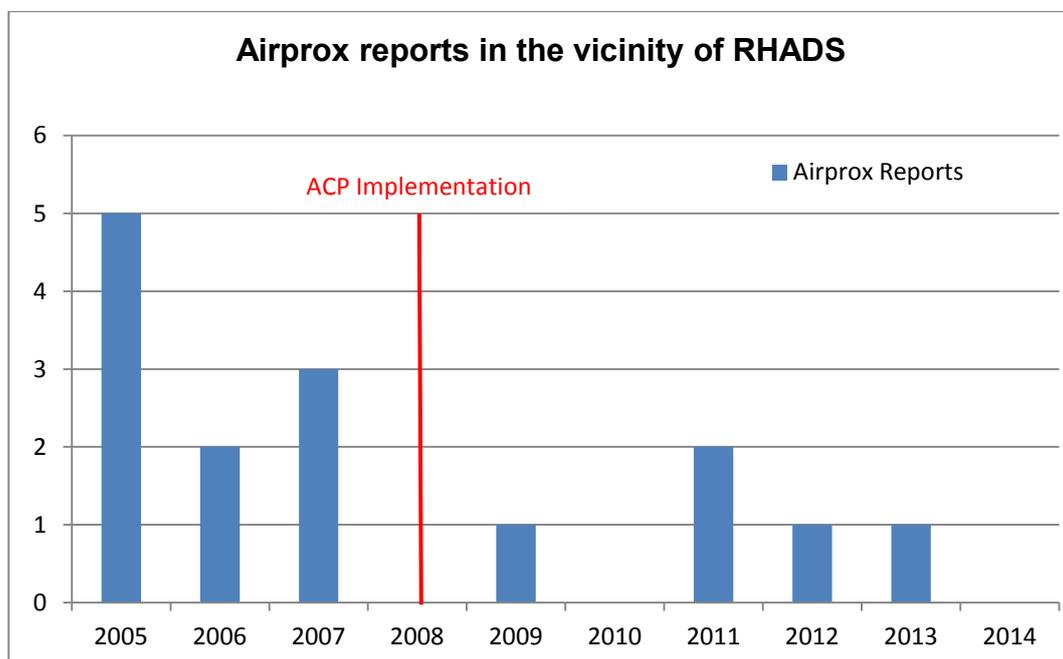


Figure 1: Airprox reports in the vicinity of RHADS

16. **Refusals.** There are no logged refusals of entry to the airspace for crossing services.

17. **Glider Activity Activation.** Several LoAs were established to allow gliders additional airspace when circumstances allow activation. The table below shows the areas, additional airspace and amount of times it was requested in 2012 and 2013.

Area	Conditions	Times Activated	
		2012	2013
Askern Buffer	Not above 600ft until inside Askern Corridor	0	0
Askern Corridor	Surface – 1500ft VFR only	0	0
Burn Soaring Box	Lower limit 2000ft Upper limit 2500ft/4500ft (Box lowered by ATC 10 mins notice for IFR departures)	19	17
Camphill Wave Boxes	Lower limit 4000ft (CTA 9) / FL60 (CTA 11) Upper limit FL85 VFR only	0	1
Darlington Soaring Box	Lower limit 2000ft Upper limit 4500ft VFR only	1	2
Goole Box	Lower limit 2000ft Upper limit 4500ft Groups of gliders transiting only. VFR.	0	1
Upton Corridor	Lower limit 4000ft Upper limit 4500ft Groups of gliders transiting only. VFR.	17	19
Worksop Corridor	Lower limit 1500ft/2000ft (dependant of CAS base) Upper limit 4500ft Non-radio gliders. VFR only	12	3

Figure 2: Table of LoA Glider Areas availability and usage

Other Impacts

18. **Continuous Descent Approaches (CDAs).** The CAS affords pilots of CAT the opportunity to perform CDAs. Removing the requirement to stop and start several descents, CDAs are regarded as requiring less fuel burn. Connectivity to the airways structure within Class D airspace affords opportunities for maximum environmental benefits to be attained by CAT.

19. **Noise.** The introduction of SIDs allows continuous climb within managed routes that are preferred for minimising disruption to the local community.

Impact on Other Airports and the Military

20. **Leeds Bradford International Airport (LBIA).** In response to the November 2013 IN, LBIA stated that:

- the airspace affected the flow of traffic between the airports, creating inefficient descent profiles and increased and unnecessary coordination which results in increased controller workload;
- as established the airspace requires LBIA to coordinate with RHADS for all inbound aircraft requiring descent approaching from the southeast, to enable the traffic to maintain the correct profile for the most efficient approach to Runway 32;
- In its view at the time of the IN, LBIA stated that the coordination unnecessarily increases LBIA controller workload during busier times;

- LBIA are rarely refused entry into the airspace as it is not being used by RHADS, yet they are required to coordinate despite having nearly 7 times the traffic loading; and
- Stepped descent profiles that arise from uncoordinated approaches over the top of RHADS airspace are inefficient in economic and environmental terms.

21. LBIA however provided further comment to CAA on 24 Jan 2017 in respect of the implementation of the ACP at RHADS. LBIA states that it now fully supports the RHADS airspace and uses it daily to facilitate descent profiles to Runway 32, and that the airspace sharing and coordination procedures currently in place work successfully and support both LBIA and RHADS.

22. **Humberside.** In response to the IN Humberside stated that:

- Whilst the introduction of airspace has resulted in the need for Humberside ATC to coordinate any inbound traffic from GOLES² requiring descent below FL090, this has rarely caused a problem owing to the low levels of activity at RHADS.
- The LoA between the units works satisfactorily, and there are no specific safety concerns.

23. **Military.** In response to the IN the Military stated that:

- Whilst unable to comment on justification for the airspace owing to a lack of data, in order for training and operations to be achieved on time, planning normally assumes that a transit around RHADS airspace is required in order to avoid the possibility that a clearance to cross cannot be given. The response states that this has a significant impact by increasing the length of a low level sortie by funnelling traffic around the airspace, and affects the routing possible.

Passenger Movements

24. RHADS sought to introduce CAS against a background of continued airport growth, and the requirement to protect these increasing CAT movements from other unknown airspace users in busy airspace.

25. The Inspector's Report for the Secretary of State regarding the RHADS planning approval Public Inquiry in 2003 stated that, in his view, there would be no immediate need for controlled airspace at Doncaster as aircraft could satisfactorily use Class G uncontrolled airspace until the airports throughput reached about 1mppa³. The Secretary of State accepted the Inspector's conclusion in this regard⁴. Whilst non-aviation specialists, in the opinion of the CAA 1mppa is considered a suitable benchmark for looking at the possible requirement for CAS at RHADS.

26. When the ACP was submitted the passenger numbers for 2007 exceeded 1mppa adding significant weight to the application, and the forecast was for sustained growth. However, owing to several reasons including a general economic downturn, high oil prices and increases in Air Passenger Duty rates, the passenger numbers at RHADS reduced rather than grew, and despite more recent upturns were still well below the cited 1mppa when the 2015 draft PIR conclusions were drafted and shared with RHADS. However, in early 2016 a carrier based 2 aircraft at Doncaster and extended its routes. This has created a significant increase in terminal and transit PAX, with the 2016 annual passenger movements figure passing 1 million in October. This review has taken into account the 2016 PAX numbers.

² ATC Reference Point approximately 9nm North of RHADS

³ Million Passengers Per Annum

⁴ RHADS ACP – Formal Proposal 2008 Updated. Executive Summary.

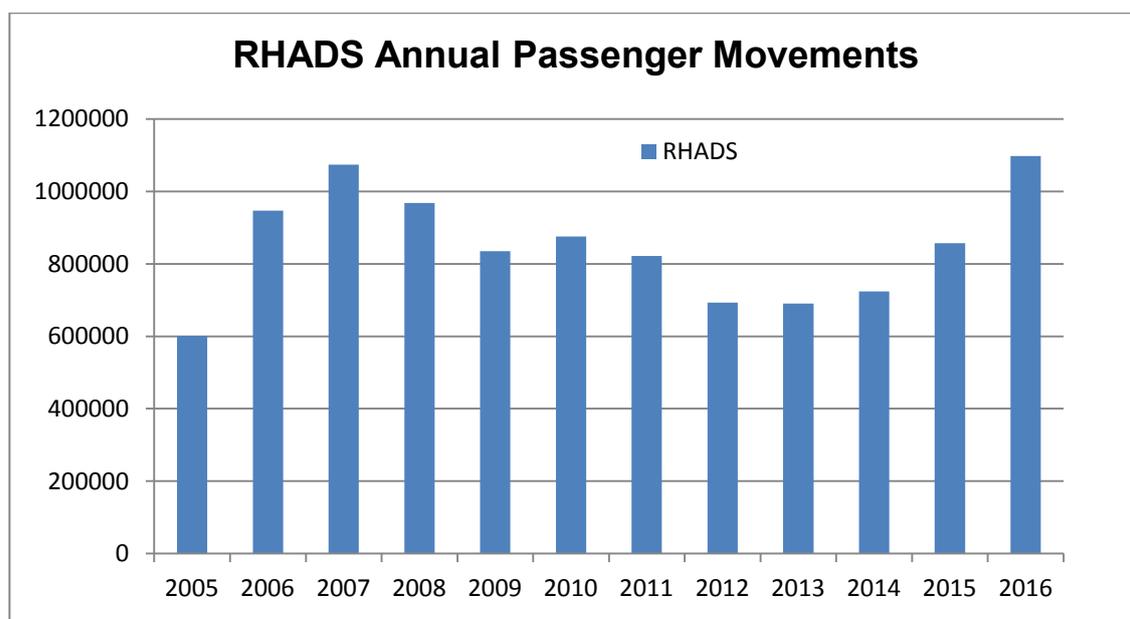


Figure 3: RHADS Annual Passenger Movements

Data Received from airspace users and other airports

27. Airspace Regulation issued an IN to all NATMAC⁵ Representatives in November 2013 requesting their views on the implementation of the ACP, as the views of those within the aviation industry are an important part of the PIR. The members were invited to provide responses to assist in determining if the anticipated benefits of the airspace change had materialised. The Aerodrome Licence Holders that were affected were also invited to comment, with only Caunton Airfield responding. The larger aerodromes in the immediate vicinity of RHADS such as Netherthorpe, Gamston and Sandtoft did not respond to the IN. The Airline Operators did not reply to the IN and neither were they part of the evidence provided by RHADS in their Feasibility and Options Report, 03 Feb 15.

28. The key areas on which feedback was provided fall into four main categories: size, passenger/ATM movements, funnelling and complexity. Each of these is dealt with in turn below together with some of the associated comments received from GA and NATMAC members.

29. **Size.** The size of the airspace is considered by many of the respondents to be disproportionate to the number of CAT movements it looks to protect.

29.1 Comments from the General Aviation Alliance (GAA)

- *Although there are letters of agreement for access and transit, and the standard Class D procedure for crossing, the CAS has stopped gliders using a vast area for thermal soaring.*
- *The CAS has severely limited hang gliding activities in an important area. LoAs have only done a small amount to mitigate this as they do not release sufficient volumes of CAS to meet the needs of this sport.*
- *The amount of airspace freed up by the LoAs does not reflect the performance of modern airliners using RHADS, and leaves in place [controlled] airspace to cater for events that will occur only very rarely.*
- *Had the traffic levels reached the level proposed in the consultation this airspace would be busy with CAT and other airspace users may have had difficulty with access, but CAT traffic is now only some 25% of that forecast [and} the airspace is little used for its intended*

⁵ National Air Traffic Management Advisory Committee

purpose; it is a largely empty space. Because of this access for GA powered aircraft is good. However, although access is available on request, the CAS does have a negative impact on flight operations well beyond its boundaries. Aircraft intending to enter the CAS have to make a request at least 10 minutes before entry. For aircraft flying at 90 kts this equates to 15nm and for 120 kts to 20nm. Over...this complex busy airspace...GA aircraft should be “aviating and navigating” rather than “communicating” administrative arrangements needed to enter an area which has a traffic density much lower than the surrounding area.

29.2 Comments from Senior Airline Capt and PPL Pilot

- *I am a senior Captain and have flown in and out of Leeds, Doncaster and Humberside over the last 15 years... I do not think that Doncaster warrants a control zone as big as it has - it is detrimental to the local area. With ATC at Liverpool overseeing the airspace, a basic [ATZ] would suffice as used at Humberside for many years.*

29.3 Comments from retired Airline Chief Instructor and Glider Pilot

- *Having flown out of Doncaster before the CAS was established, I found the lack of it surprising at best! However, I do feel that it was overdone with far too much airspace being taken by Doncaster.*

30. PAX and ATM Movements. Some responses state that the CAS is not justified by the current levels of passenger and ATM movements, that the forecast growth has not materialised, and that the limited use by commercial traffic is disproportionate to the impact on other airspace users. It should be noted that these comments were made before the recent rise in traffic numbers.

30.1 Comments from the GAA

- *At the time of the consultation, we were told that “the existing GA and military operations together with the existing and planned traffic levels of the Airport merit the establishment of the proposed Class D airspace”. Local users were also briefed by the Manager Air Traffic Services that “the requirement for controlled airspace was not based on current levels, but on estimated expansion of future movements”... In the light of this fundamental difference in the nature of the operation we question if the airspace is performing the function for which it was established.*
- *Each local gliding club had many more movements than Doncaster Airport and it appears the allocation of airspace is not properly balanced.*
- *The CAT traffic has failed to materialise and the airspace is largely empty. Its presence has had a significant impact on GA stakeholders, restricting their operation for no particular benefit to society.*

30.2 Comments from the Yorkshire Gliding Club (YGC)

- *The establishment of the Doncaster Class D has had a significant negative effect on cross country flying south of the Humber by YGC pilots. Overall we do not believe that the very limited use of Robin Hood Airport now made by commercial traffic justifies the existence of Class D airspace when account is taken of the considerable inconvenience to all types of GA, the increased collision risk of aircraft flying round the outside of the airspace, and the increased risk brought about by the additional workload when transiting the airspace.*

30.3 Comments from Lincoln Aero Club (LAC)

- *It is the policy of LAC that we support initiatives to improve flight safety and we support controlled airspace where it is in the common good. However, the original aircraft movement forecasts made by Doncaster Sheffield to justify Class D airspace have not been achieved. We believe flight safety for aircraft in and around Sturgate has been significantly compromised. This is a direct result of the Doncaster Sheffield CTR/CTA. There is very little benefit to the wider community. Humberside with over three times the movements have recently [2010] decided to suspend their proposal for Class D airspace due to their failing to achieve their anticipated expansion.*

30.4 Comments from Leeds Bradford International Airport (LBIA) (see, however, further comments from LBIA at paragraph 21 above)

- *Doncaster's CAS cannot be justified by the low and decreasing [2013] traffic levels which show no sign of improving, and certainly no signs of achieving the forecast traffic levels that the CAS was established to accommodate. It is a substantial and unnecessary impediment to traffic outside of controlled airspace wishing to route south/north that is already inconvenienced by Liverpool, Manchester and LBIA CAS. In 12 months to Sep 2013, Doncaster had fewer ATMs than Humberside, Exeter, Inverness, Lands End, Newquay, Blackpool, Scilly Isles, Kirkwall, Southend* and Stornoway, (none of which have CAS), and fewer PAX than Exeter and Southend*. (*The CAA notes that CAS has since been established at Southend on 02 Apr 2015.)*
- *The ratio between Doncaster to Leeds traffic based on Air transport Movements has risen from 1:5 in 2008 when the Doncaster CAS was established to 1:7 based on July 2013 figures. Based on 2012 ATM figures Doncaster has suffered a 41% decline in ATM with further reductions forecast for 2013 and 2014 due to further scaling back of Thomson and Flybe routes. Evidentiary data is provided.*

31. **Funnelling Effect on Visual Flight Rules (VFR) Traffic.** The original ACP consultation received responses that the introduction of a large portion of CAS around RHADS would create a funnelling effect on VFR traffic. RHADS attempted to mitigate this impact by operating a 24/7 radar Air Traffic Service (ATS) to facilitate crossing of the airspace. In addition LoAs were introduced with neighbouring airfields, and corridors established for gliding and soaring. In response to the IN request for feedback, several respondents have cited that these have a limited effect and they either elect or are forced to route around the airspace. In their view this has the impact of funnelling the VFR traffic, creating choke points where the risk of a conflict in Class G is increased. See below:

31.1 Comments from the GAA

- *As is usual in ACP consultations, Doncaster offered access on request for VFR traffic but because of the difficulty in communicating and the inability to maintain a level or necessarily follow a clearance, aircraft which rely on the energy of the atmosphere for their motive power are rarely able to enter CAS. This is captured well by the data record from the BGA ladder of cross country flights depicted in the Annexes B and C. [These show that] the route of the main traffic flow has been concentrated and moved east by the Doncaster CTR... [which has] produced a "squeeze", forcing all gliders and most GA traffic into a narrow corridor...increasing the probability of conflicts. [In addition] by lowering the airspace under L975 from FL55 to 4000ft and 4500ft it has made it much more difficult for pilots to fly between Derbyshire and Yorkshire. Again a narrow corridor is formed between the long established Leeds Bradford Class D and RHADS, forcing most GA into it, causing the probability of conflicts.*
- *Safety [for hang gliding and paragliding pilots] has been markedly lowered through the creation of a series of new choke points demanding significantly higher levels of pilot effort being focused on remaining airborne.*

31.2 Comments from Retired Airline Chief Instructor and Glider Pilot.

- *The main consequence [of the CAS] which I see on an almost daily basis in the summer is that of concentration of VFR traffic down the Trent Valley corridor. There is a choke point at the mouth of the River Trent where many light a/c and gliders route to avoid Doncaster and Humberside. This choke point funnels traffic into a corridor as it moves North and South along the Trent valley. Flying into Doncaster in a 737 with no CAS available was bad but this choke point and funnelling is perhaps worse in terms of actual risk as there is so much more risk of collision in my view.*

31.3 Comments from Caunton Airfield

- *Since the implementation of RHADS airspace we have noticed an increasing density of GA traffic to the South and East...along the River Trent where aircraft are routing to avoid the*

airspace. Concentrating aircraft into smaller areas of open airspace inevitably increases the risk of an in-flight collision. A reduction in the size of RHADS would help reduce this risk.

31.4 Comments from Yorkshire Gliding Club (YGC).

- *Given the excellent and challenging conditions at our site...the club is quite rightly considered to be the best soaring club in the North of England... However, since the introduction of Class D airspace at Doncaster 28th August 2008, planning cross-country flights in a southerly direction from North Yorkshire has been significantly compromised. Our general practice now is that, although some transit the airspace, many now plan their tasks to avoid or circumvent the Class D by either declaring shorter, more complex, tasks keeping north of the Humber or by diverting to the east or west of the airspace*
- *With regard to diverting to avoid the airspace, the western route demands very careful navigation, initially to keep clear of Leeds CTA (base 3000ft), then to transit through CTA 8 (base 4000ft) keeping west of CTA's 1, 4 and 6. Pilots choosing this route usually phone Doncaster ATC before departure requesting the Upton corridor should be opened which raises the operating height available to 4500ft. In every case permission has been speedily granted which perhaps indicates that the lower level is rarely if ever required for commercial operations out of Robin Hood airport. Telephone contact with Doncaster ATC has invariably been quick, courteous and helpful. I would add however that significant numbers of gliders and GA powered aircraft use the western route to avoid Doncaster which has the effect of concentrating traffic in a relatively narrow corridor and height band. This does, in our eyes at least, increase the risk of collision and is therefore a safety issue.*
- *In taking avoiding action to the east, it is usual for our pilots to add an additional waypoint into the flight plans to ensure adequate clearance of Class D. The route takes the flight path closer to the Humber Estuary/East Coast which can compromise a flight in a glider as soaring conditions in the sea air, particularly later in the day, can often be difficult... The diversion to the east also routes the glider towards Hibalstow [parachute field], Hemswell and Waddington ATZs and the major restricted area around Scampton... All pilots report these situations increase workload and therefore the risk. Indeed being cleared to transit also results in increased work load that affects accurate soaring, thermal choice and centring due to the ongoing RT requirement. Having to be on the Doncaster frequency both to ask for clearance and whilst transiting, means the pilots cannot listen to gliding frequencies with information about soaring conditions on track.*
- *Those pilots with gliders fitted with transponders believe they benefit in the level of service they get from the ATC.*
- *Opportunities for speedy distance flights from North Yorkshire have become much more difficult since Doncaster Class D was introduced. We believe this has had a detrimental effect on glider pilots flying from clubs located in the NE of England.*

31.5 Comments from Lincoln Aero Club.

- *Lincoln Aero Club is very concerned with the flight safety [impact] of low level traffic in the wider area of West Lincolnshire resulting from the introduction of Doncaster/Sheffield CTA/CTR. We have observed a greater volume of traffic funnelled into a narrow corridor along the Trent Valley. Lincoln Aero Club is concerned not only with aircraft coming into conflict with traffic in the Sturgate circuit pattern, for the safety of traffic wishing to transit the area coming into conflict with other aircraft.*

32. **Complexity.** Some respondents to the IN commented that the boundaries of the airspace are more complex than they need to be, and a simplified layout would be beneficial to flight safety. For example:

32.1 Comments from GA Pilot and Airstrip Owner to the South of RHADS

- *I regularly fly to the south which each time involves either transiting Doncaster airspace or making a slight detour round it. The controllers are great and have never refused me a crossing. However I would raise one concern in relation to safety. The boundaries of the airspace seem to me to be more complex than they might be. On first calling [the] controller*

usually asks for location and time of entry into the airspace, and any slight deviation off track can lead to quite a difference in answer. Even with good flight planning this has the tendency to lead to too much “head in cockpit”.

RHADS Feasibility and Options Report

33. The Feasibility and Options Report produced by RHADS looked at several possible ways to modify or reduce the CAS at RHADS. Several of these options align with the CAAs developing thinking and modern airspace design techniques, and were discussed at length with RHADS, in particular the possibility of raising the base levels of some of the CTAs which was identified as possible in RHADS’ report. However, the report concluded that in the opinion of RHADS the only option which maintained current full protection to CAT operations was for the airspace to remain as it is currently designed. It should be noted that RHADS provided a further report, RHADS PIR Review of SARG Options, 20 Sep 2016, which retracted the previously suggested CTA base level rises previously deemed acceptable in the Feasibility and Options Report and discussed by SARG.

34. This is discussed further below and in Annex D.

Regulatory Analysis

35. The implementation of Class D at RHADS has achieved its stated aims with regard to protecting CAT flights operating in and out of the airport, improving the operations of airspace users to and from the airport, and minimising the environmental impacts of those operations upon local communities. The introduction of SIDs and STARs and connectivity to the airways structure contained within Class D airspace undoubtedly reduces controller workload, and planning complexity for pilots and ATC alike. However, as set out above, a number of issues were highlighted in stakeholder feedback which requires further analysis

36. **Size.** Owing to numerous additional factors (location, ATM movements, adjacent airspace and operators, traffic density etc) having to be taken into consideration, no defined formula exists to calculate the number of passenger movements required at an airport to justify CAS. This means direct comparisons between different regional airports PAX and CAT movements, and the size of any associated CAS, is of limited use. The airspace was designed in accordance with ICAO design principles. At the time CAA interpretation of these principles required all departure, arrival and holding patterns to be contained within controlled airspace. This interpretation and hence requirement has since changed as detailed in the Controlled Airspace Containment Policy, 17 Jan 2014, and containment is no longer deemed essential, and *‘the establishment of SIDs [and STARs] outside CAS is now being considered by the CAA on a case by case basis’*⁶. Notwithstanding this the PIR is not an opportunity to re-assess the design criteria, but is a framework for assessing the impact of the ACP decision.

37. **PAX and ATM Movements.** The original ACP decision⁷ states that the Change Sponsor had sought to introduce controlled airspace “against a background of continued airport growth” and that “the existing airspace arrangements are no longer considered to be adequate”. The number of airport passenger and CAT movements were clearly part of the justification provided for the introduction of controlled airspace at RHADS, and the requirement to protect these movements from itinerant aircraft in busy airspace.

38. By the time the PIR was commenced, passenger numbers were significantly lower than at the time of the ACP decision. This was not something anticipated by RHADS or the CAA when the ACP was approved. A number of stakeholders’ responses to the IN highlighted an apparent disparity between the falling numbers of PAX movements and the size and complexity of the airspace. However, in this particular context, the focus of the PIR was on whether the objectives and anticipated benefits of the ACP had been delivered and significantly reduced PAX numbers are not

⁶ CAA Policy Statement - Controlled Airspace Containment Policy, 17 Jan 14

⁷ Introduction of Class D Controlled Airspace in the vicinity of Robin Hood Airport Doncaster Sheffield, 2 July 2008

directly relevant to the assessment. In addition, in recent months RHADS has achieved airport growth compared to the PAX movements when the ACP decision was originally made in 2008.

39. **Funnelling Effect.** Whilst the CAA acknowledges the comments from both GA and gliders raising safety concerns from the effect of funnelling, and the impact of potentially having to plan to route around the airspace, these concerns have not manifested themselves in safety occurrences as since the implementation of the ACP AIRPROX reports in the RHADS local vicinity have decreased (Figure 1).

40. A crossing service is provided by RHADS and there are no logged refusals to this service, nor feedback from GA that they have been refused. Several comments were received that refusals were not occurring because there are no CAT to conflict with the transit, or that the majority of transiting GA and gliders plan to route around the airspace rather than requesting a crossing service. However, acknowledging that the service precludes access for non radio equipped aircraft, in our view, it is provided and works as designed and anticipated.

41. **Complexity.** The CAA acknowledges that the numerous CTAs and varying base levels make for a complex design. This was to conform with the interpretation of design criteria at the time, and an attempt to reduce the amount of CAS where possible.

Regulatory Conclusions

42. Airspace is a finite national asset with a range of diverse airspace users vying for access to it. This creates a significant challenge to ensure there is an equitable balance for all airspace users across the breadth of the UK. The need for a more efficient use of airspace is fundamental, as it will benefit not just CAT but also other airspace users. CAS should reflect practical operational requirements, and a balance should be struck between design principles including containment, and minimising the volume of CAS.

43. The CAA acknowledges that a number of the comments received in response to the IN relate to the perceived adequacy of the ACP decision itself, rather than highlighting differences between the anticipated and actual benefits and impacts. This has been complicated by the time-lag between implementation and the PIR, a period during which there have been significant changes in airspace policy and design tools and techniques. These issues are explored separately below but do not form part of the PIR conclusions.

44. The CAA is satisfied that the implementation of CAS at RHADS has generally been beneficial in terms of meeting the key objectives of the ACP by protecting CAT in the critical arrival and departure phases of flight. This is supported by a decrease in Airprox reports since implementation.

45. The CAS at RHADS was introduced for operational reasons rather than environmental. The impact of fuel burn and emissions was not assessed as this was not a specific requirement of CAP 725 at the time of the original consultation. It was proposed that the use of CDAs and operating in a known traffic environment would avoid the need to change flight path and result in better flight profiles and fewer deviations, however no conclusions can be made without an emission analysis. That said the introduction of SIDs ensuring noise is primarily located along the more sparsely populated NPRs, means the number of people most affected by noise is not likely to have increased.

46. By creating a 'known traffic environment' and affording CAT the protection of CAS and the predictability of SIDs and STARs, the desired operational benefits to airspace users to and from the airport have been achieved.

47. The PIR process has been significantly delayed owing to exceptional circumstances, including planned delays to assist the airport in recovering after a recession, and unforeseen Airspace Regulation internal administrative delays. It is, however, the conclusion of the CAA that, whilst not

as efficiently or flexibly designed as it might be if the ACP decision was taken today, taking into consideration all of the comments and feedback received from all stakeholders, the Class D airspace implemented at RHADS has achieved its stated aims in the original ACP submission, and therefore there are no requirements for modification as part of this PIR process and the airspace at RHADS should remain as it has been since implementation on 31 July 2008.

48. The CAA's airspace change process in respect of the introduction of CAS at RHADS has now concluded.

CAA Review of Options for Current RHADS Airspace Design

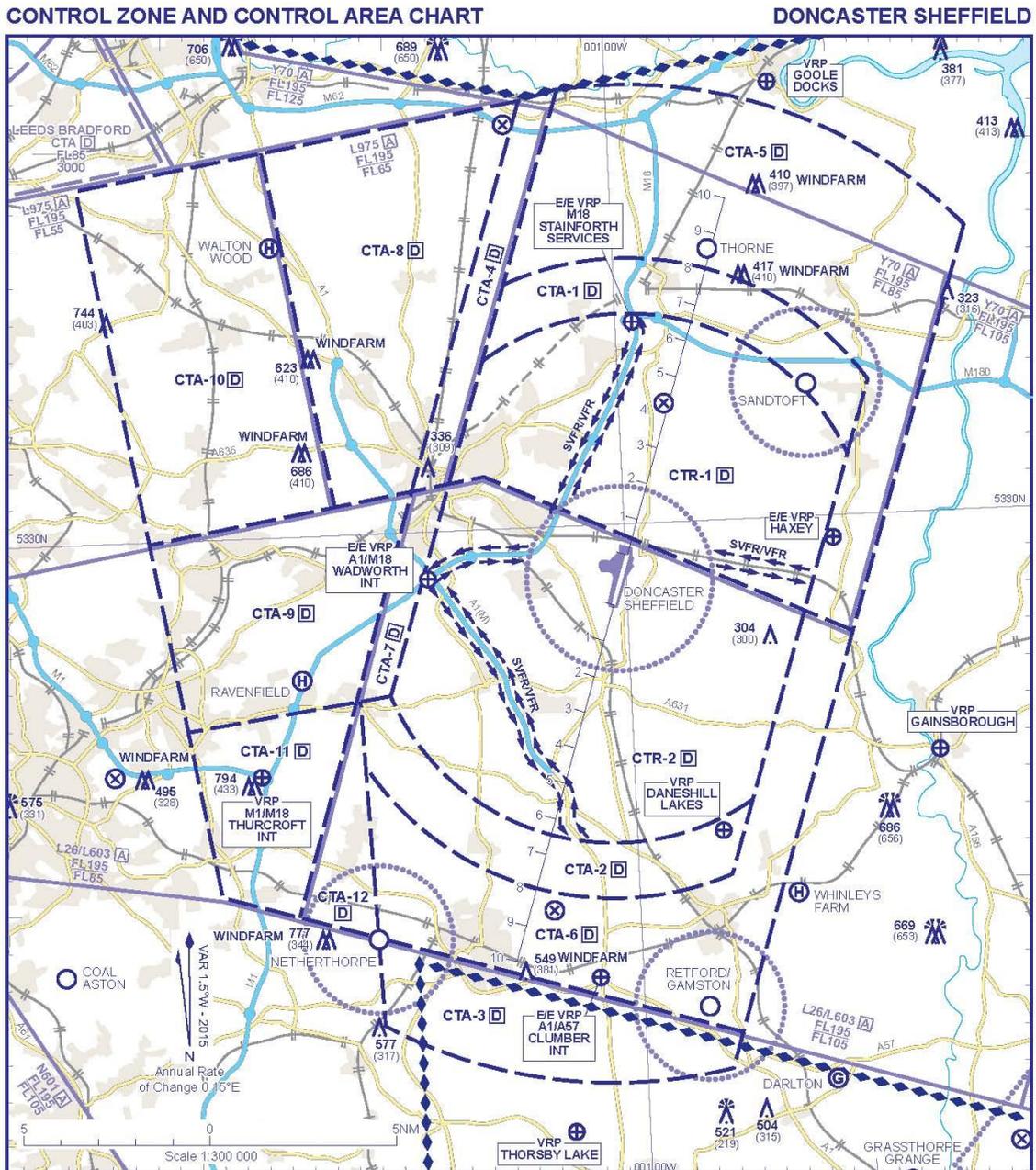
49. Since the implementation of the ACP airspace policy and airspace design tools have developed and evolved, significantly shifting the landscape from when the ACP was originally implemented. For example in accordance with the DfT's General Aviation Strategy, 26 March 2015, the Future Airspace Strategy VFR Implementation Programme has set out packages of change looking to ensure the GA sector realises some benefits, including that 'the importance of VFR operations is understood and recognised in airspace policy and decision making...and controlled and regulated airspace is rebalanced to reflect the needs of both VFR and Instrument Flight Rules (IFR) operations'. In addition since the RHADS ACP was submitted and approved, UK interpretation and policy on ICAO legislation regarding airspace design criteria has changed. The requirement that CAS 'must' encompass all of the departure, arrival and holding patterns has been removed and now situations exist where SIDs and STARS may be permitted outside CAS. Alternatively the classification of CAS could be changed to the least restrictive, if tangible benefits such as real time airspace sharing can be facilitated without detrimental impact to safety.

50. To assist the PIR process RHADS produced their Feasibility and Options Report, 03 Feb 15, which considered options for modifying the airspace. A summary of such options is detailed separately in Annex D, together with some limited analysis of those options by Airspace Regulation. As stated above, this does not affect, nor does it form part of, the PIR conclusions and is for information purposes only.

Annexes:

- A. Doncaster Sheffield Control Zone and Control Area Chart
- B. BGA Ladder Record Prior to Doncaster CAS Establishment
- C. BGA Ladder Record After Doncaster CAS Establishment
- D. Summary of Options Analysis for RHADS Airspace

Doncaster Sheffield Control Zone and Control Area Chart



ATS AIRSPACE VERTICAL LIMITS Controlled airspace with an upper vertical limit of FL195 and above is not shown.

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

LATERAL LIMITS
See AD 2-EGCN 2.17

GENERAL INFORMATION
There is an increased risk of Controlled airspace infringements by unknown aircraft in the vicinity of Sandtoft and Netherthorpe airfields.

CHANGE (9/15): MAG VAR. GENERAL INFORMATION NOTE ADDED. OBSTACLES.

BGA Ladder Record Prior to Doncaster CAS Establishment

BGA Cross-Country Glider Routeings



Figure 3: BGA Ladder Record Prior to Doncaster CAS Establishment⁸

(75779 data points from 752 flights between 1 Jan 2000 and 28 Aug 2008 inclusive)

Note: The colour shading depicting traffic density is to the same scale in both figures but the increased use of the ladder in recent years results in 3 times as many tracks being depicted after 28 Aug 2008 as before.

⁸ Source General Aviation Alliance

BGA Ladder Record After Doncaster CAS Establishment

BGA Cross-Country Glider Routeings

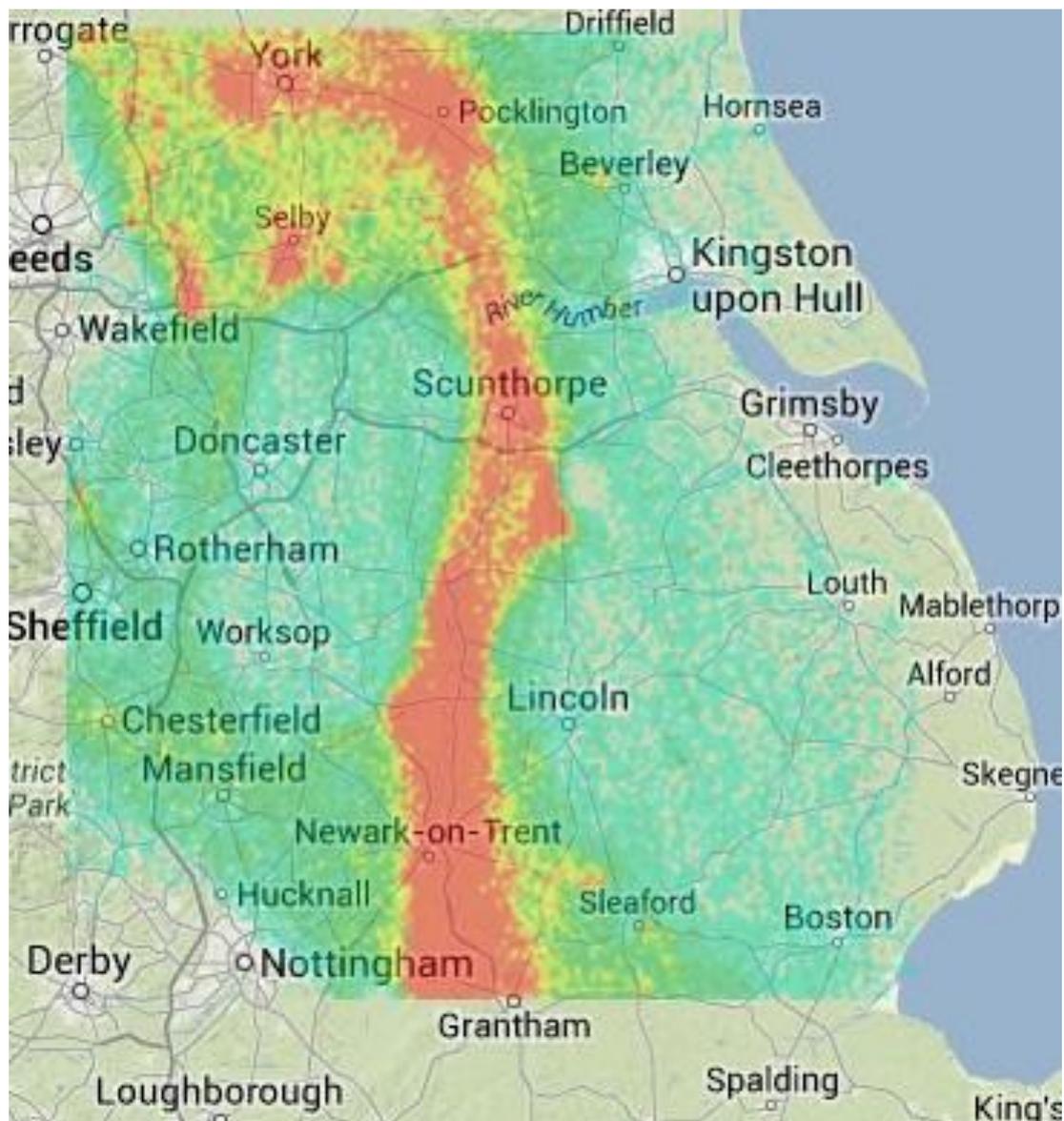


Figure 4: BGA Ladder Record Prior to Doncaster CAS Establishment⁹

(248352 data points from 2633 flights between 28 Aug 2008 and 24 Dec 2013 inclusive)

Note: The colour shading depicting traffic density is to the same scale in both figures but the increased use of the ladder in recent years results in 3 times as many tracks being depicted after 28 Aug 2008 as before.

⁹ Source General Aviation Alliance

Summary of Options Analysis for RHADS Airspace

1. To assist the PIR process Doncaster produced the RHADS Feasibility and Options Report, 03 Feb 15, which looked at options for modifying or reducing the airspace. These are considered below stating the RHADS comments from the report, and CAA opinion taking into consideration all airspace users and modern design techniques. The options below are in a slightly different order to how they are presented in the RHADS report.

2. It should be noted that where RHADS made suggestions in this report that the base levels of some CTAs could be raised without impact to operations or safety, they have since produced a document entitled Review of SARG Options, 20 Sep 2016, stating that they no longer believe some CTAs could be raised without impact to operations or safety. In addition neither RHADS nor the CAA have conducted a safety assessment for any of these options.

Option 1 – Do Nothing

3. **The following is a summary of RHADS' Report on this option:** This is the only option that proffers full protection to passenger carrying CAT operating in and out of RHADS. Therefore, any reduction or change to the airspace would constitute a reduction in the safety currently provided to commercial airliners. This is demonstrated by the number of Airprox reports made in the airspace surrounding RHADS, before and after the implementation of CAS. Maintaining the current RHADS CTR/A is the only way to guarantee a traffic environment where the intentions of airspace users are known to RHADS controllers and are subject to an element of control. The benefits are not only safety (although this is prime), but aircraft can be assured of their route either in or out of the airport. This facilitates CAT CDAs, which reduces both noise, and fuel burn, as pilots can continue their descent at a steady rate without the requirement to level off, trim out and recommence descent. Despite the objections from some aviation stakeholders prior to the implementation of CAS, requests for 'release' of the areas available to local GA (sports and recreation) organisations, by these organisations, has been very low in the last 5 years. Change in itself increases risk. Local GA is now familiar with the airspace and has become accustomed to the level of service that the controllers are able to provide. This has increased safety benefits to all airspace users both within the RHADS CAS and within its vicinity. Option 1 is the preferred option for the Airport primarily as there is no associated change to the protection currently afford to RHADS operations. Flight safety and the commercial viability of the airport is maintained.

4. **CAA Opinion.** The LoAs in place and 24/7 ATC coverage facilitate access for a significant proportion of GA. Comments from airspace users are favourable that crossings are always achievable when requested. However, some respondents to the IN state that the crossings are easily facilitated as the expanse of airspace is frequently empty. It is the efficiency and proportional nature of its use that is brought into question, as is the justification for such a large expanse of CAS for a regional airport. The RHADS Feasibility and Options Report stated that *'any reduction or change to the airspace would constitute a reduction in the safety currently provided to commercial airliners'*, and that *'change in itself increases risk'*; however, it is the opinion of Airspace Regulation that this is not necessarily the case, particularly as no safety analysis of the other options has been conducted to support this statement.

Option 2 – Remove all CAS

5. **The following is a summary of RHADS' Report on this option:** Reverting the RHADS CAS to Class G airspace would have the most dramatic effect on the Airport. This option would see the Airport returning to the pre-2008 airspace where the only protection afforded to CAT would be the 2.5nm ATZ. This is not sufficient to fully protect IFR CAT trying to arrive at, or depart from, the

Airport, particularly given the nature of the surrounding aviation users. There is significant potential for RHADS to see an increase in the number of Airprox reports or Mandatory Occurrence Reports (MORs), and aircraft would be highly unlikely to be able to carry out a CDA, conflicting traffic would need to be avoided by 5nm under a Deconfliction Service (DS). Reversion to Class G *in toto* would make NPRs very difficult to maintain, and therefore, there could be an increase in disruption to the local population and a commensurate increase in noise complaints. This option would severely restrict the commercial viability of the airport.

6. **CAA Opinion.** Prior to opening in 2005, a risk assessment was conducted which considered the risk of commercial operations in Class G airspace at RHADS as tolerable and ALARP¹⁰, and that pre-airspace implementation operations were safe¹¹. The planning approval Public Inquiry Inspector's Report went further stating that at RHADS aircraft could satisfactorily use Class G uncontrolled airspace until the airports throughput reached about 1mppa. This level has now been achieved and it is believed will be maintained, therefore it is the opinion of Airspace Regulation that some form of CAS is justified. In addition the wider implications of removing all CAS and reverting to an ATZ as the only form of protection need considering.

7. The SIDs were designed to minimise environmental impacts including noise on the local population. Removing the CTR would make it more difficult for CAT to stay established on these routes, potentially having a detrimental impact. In addition, there would be no protection afforded to aircraft during the critical stages of flight, and there is potential that there would be an increased likelihood of 'conflicts within Class G' resulting in potential ACAS action, Mandatory Occurrence Reports (MORs) or even AIRPROX. Whilst other regional airports safely conduct operations within Class G airspace, as did RHADS prior to implementation, this is not deemed appropriate for the level of activity currently conducted at RHADS.

8. Airspace Regulation acknowledges RHADS concerns that removal of all CAS carries the risk of airline operators moving away from the airport. A significant number of mixed type GA and Military routinely operate in the local airspace, particularly compared to other more remote locations within the UK. This could impact on an operator's safety case if the protection of CAS was removed, despite prior operations in Class G at RHADS being tolerably safe. The impact of operators leaving the airport could have a significant negative impact on the local economy which has seen considerable investment promoting growth such as the £58million FARRS¹² Project which is a new link road from the M18 to RHADS.

9. Airport and Airline Operators, airspace users, local communities and Local Government have all become accustomed to the presence of the airport in its current form. The associated CAS has been established since 31 July 2008, and since then significant local investment has taken place. Removing the CAS in full after such an establishing period could have a potential impact on the non-aviation community. Airspace Regulation does not believe this would be a suitable option.

Option 3 – Disestablish the CTAs

10. **The following is a summary of RHADS' Report on this option:** Removing parts, or all of some of the CTAs, reverting to background Class G, has been considered. If a reduction meant that published IFPs were no longer contained within CAS, this is permissible but a safety case must be conducted to support the argument for the IFP within Class G airspace. Whilst this option would continue to provide protection to aircraft on the critical stages of flight (on final approach for landing or immediately after take-off in the Class D CTR), it would expose CAT to a large area of uncontrolled airspace before reaching the safety of the airways system. Some of the conflicting aircraft are likely to be military fast jet aircraft, a fast and dynamic entity, which makes a conflict very difficult to predict and very difficult to out-maneuvre. Since regular users of RHADS have been accustomed to the protection of the CAS provided by the CTAs, this may actively discourage operators from continuing to use RHADS in the face of a perceived reduction in safety and/or

¹⁰ As Low As Reasonable Practicable

¹¹ RHADS ACP – Formal Proposal 2008 Updated. Safety Management 8.3.1

¹² Finningley and Rossington Regeneration Route Scheme

efficiency. In order to consider this option, it is necessary to analyse each individual CTA to ascertain the impact of a potential decision to revert to Class G airspace.

11. The report then details each CTA in turn analysing the impact of reverting each to Class G. These are summarised below:

- CTA 1 provides vital protection to aircraft on final approach for Runway 20 or immediately after departure on Runway 02. At many airports, this would be part of the CTR, extending to surface level.
- CTA 2 provides vital protection to aircraft on final approach for Runway 02 or immediately after departure on Runway 20. At many airports, this would be part of the CTR, extending to surface level.
- CTA 3 provides protection for IFR aircraft positioning on final approach to runway 02. The upper level is set at FL60, which protects aircraft conducting a procedural hold, prior to establishing onto final approach.
- CTA 4 increases the overall width of the CTA. The removal of this airspace would not represent much of an increase in available airspace for the GA community, but would reduce the protection of IFR aircraft in the critical stages of flight by reducing the lateral separation from the west when aircraft are on final approach to Runway 20.
- CTA 5 provides protection for aircraft positioning on final approach to Runway 20. The upper level currently abuts CAS (Class A). The base level of 2,000 ft (AMSL) allows aircraft the freedom to operate below CAS without the requirement for a clearance from ATC.
- CTA 6 provides protection for aircraft arriving on Runway 02. The base level of 2,000 ft AMSL allows for aircraft at Gamston and Netherthorpe to operate below the CAS without requiring a clearance. In addition, current local arrangements are in place to allocate more of the airspace to Gamston and Netherthorpe when not required by RHADS. Without its protection, IFR could be subject to avoiding action whilst positioning to final approach.
- CTA 7 is another small fillet of airspace that replicates the purpose of CTA 4.
- CTA 8 provides connectivity between the CTR and the en-route structure. The current base level is 4,000 ft AMSL, although, a portion, from 4,000 ft to 4,500 ft AMSL is released, on request, to the BGA.
- CTA 9 provides a similar function to CTA 8 for aircraft arriving at Runway 02 or departing from Runway 20.
- CTA 10 provides connectivity to the en-route structure and allows aircraft to descend out of the airways structure and position for an approach to either runway. This area is also frequently the subject of tactical coordination agreements with LBIA.
- CTAs 11 & 12 are small fillets of airspace that allow for a stepped descent into the CTR or a climb from RHADS into the airways structure. One of the constraints placed upon RHADS when the airspace was approved in 2008 was that IFR traffic is not permitted to position downwind left for Runway 02. This section of airspace facilitates the descent within CAS avoiding the noise sensitive areas accordingly.

12. **CAA Opinion.** In this option the CTAs would revert to Class G airspace with no restrictions on GA outside of the CTR. This would produce unrestricted access to a significant proportion of airspace for all users. This option would continue to provide protection to CAT on the critical stages

of flight (final approach for landing and immediately after take-off) within the Class D CTR¹³. Figure 1 below shows the heights at which departing aircraft must be 'at or above' when performing a SID. The SID with the shortest track distance before leaving the CTR is the Upton 1C. If the CTAs were disestablished aircraft performing this will be above 3000ft before leaving the protection afforded by Class D. This also corresponds with the end of the NPRs¹⁴, and conforms to current departures where 'ATC shall be permitted to vector aircraft upon reaching 3000ft Above Aerodrome Level (AAL) onto a more direct routing if appropriate'¹⁵. This height and the departure profiles were agreed during the Public Inquiry and form part of the environmental considerations of the planning application.

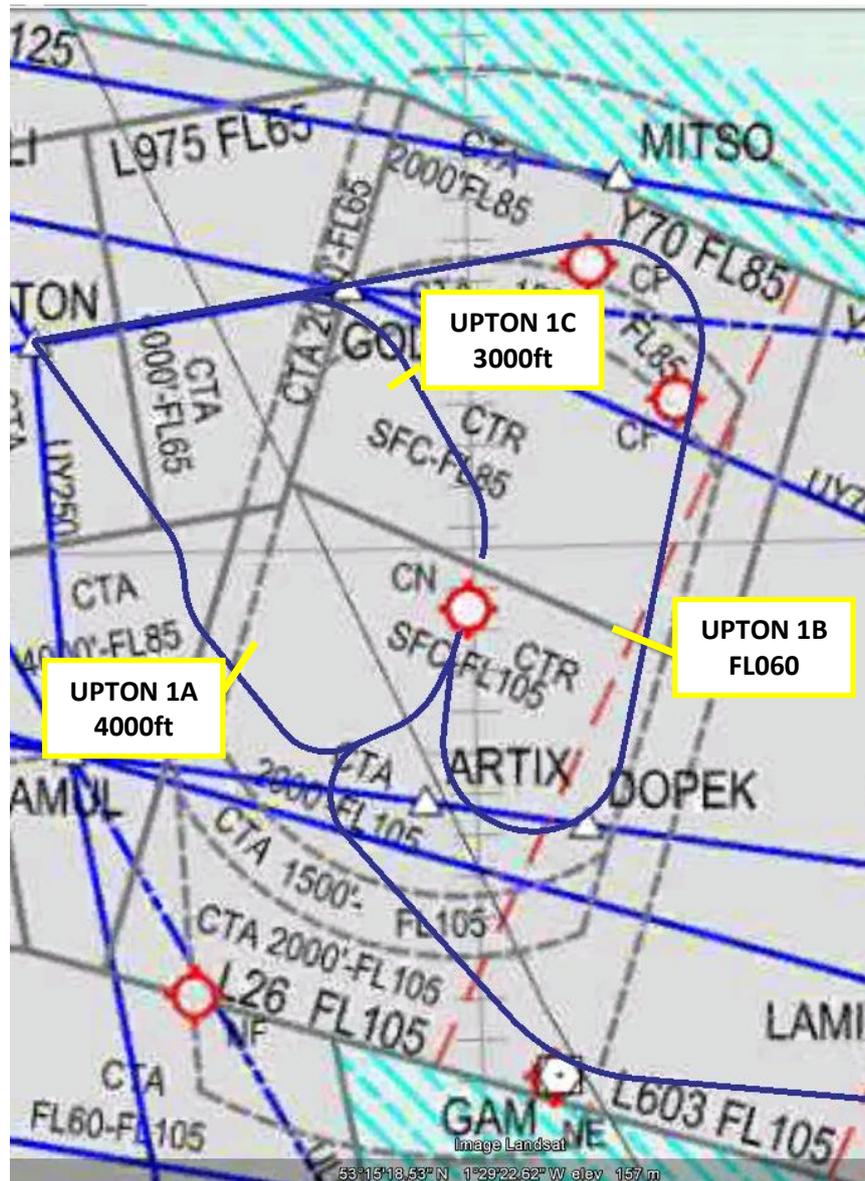


Figure 1: RHADS Standard Instrument Departures

13. In the opinion of RHADS this option creates a perceived reduction in safety and/or efficiency on CAT whilst transiting from the CTR, through Class G airspace, until entering the airways network above. However, whilst understandable from an Airport or Airline Operators perspective when compared to the current CTA structure, there would be a significant number of GA aircraft

¹³ RHADS Feasibility and Options Report dated 03 Feb 15, Para. 4.4

¹⁴ UK AIP EGN AD2.21 Noise Abatement procedures 3(b).

¹⁵ RHADS ACP – Formal Proposal 2008 Updated. 4.31.5.

benefitting from increased ease in access and transit, who are also able to operate safely within Class G airspace under the principle of 'see and avoid'. In addition CAT would receive an Air Traffic Service which enhances safety in Class G, but may lead to a less efficient routing to join the airways network. A concern by RHADS is that in extremis an Operator may consider the perceived reduction in safety significant enough to warrant relocating to a different airport. In the opinion of Airspace Regulation, this could only be assessed by an Airline Operator conducting a safety assessment. This should also consider past operations at RHADS and current CAT operations at other regional airports without CAS which are and have been tolerably safe. In addition the impact could be mitigated by the Operator electing to perform Upton 1B SIDs for Rwy 20 departures. As per the diagram above, this SID has an aircraft 'at or above' FL060 (at GAM D11) which provides additional climb over an Upton 1A within the CTR, whilst retaining the option to vector early once above 3000ft within CAS if appropriate or necessary. If the Upton 1B was routinely planned for, any inefficiencies should be negligible as the aircraft would remain on its planned track, or vectored early to avoid conflicts, until established in the airway.

14. Whilst the critical stages of flight are protected within the CTR, the Feasibility and Options Report states that CTAs 1 & 2 specifically provide '*vital protection*' to aircraft on final approach. In addition it says that '*at many airports this would be part of the CTR*' and that they are only CTAs to allow aircraft from nearby airfields such as Sandtoft, Gamston and Netherthorpe to operate or transit without requiring a clearance. Airspace Regulation accepts that at some airports this area is incorporated within their CTR, and that in this instance CTAs 1 & 2 should be considered separately from the other RHADS CTAs, and in conjunction with the CTR.

15. To harmonise the local airspace and simplify the design by avoiding any unnecessary pressure calculation complications, the CTR could be lowered to 5,000ft which is in line with the Transition Altitude in the local area. This would still allow CAT to use of the hold, which is established at 3,500ft, with a 1000ft buffer to afford protection from aircraft outside CAS. The hold is a 1 minute race-track procedure heading 200°/020°, based on the NDB located at the centre of the airfield, and is wholly contained within the CTR.

16. Disestablishing the CTAs, (except for CTAs 1 & 2), lowering the CTRs and CTAs 1 & 2 to 5,000ft and simplifying the design with the western boundary of CTA 2 being a straight line extension of the CTR would generate a 71.8% reduction in current RHADS Class D CAS volume, whilst retaining CAT protection in the critical stages of flight and maintaining an option to hold if required. However, this would have the effect of removing current CAS connectivity to the airway structure, and provides the possibility for over flight of the CTR below FL100 by non-squawking aircraft.

17. Whilst over flight by non-squawking aircraft is an unlikely scenario, with the recent increase in CAT traffic operating out of Doncaster the transit through Class G airspace to the airways structure could add a significant workload to ATC and pilots alike, with possible re-routeings and extended R/T negotiations. The proportionality of the benefits this gives to other airspace users over CAT operations is, in the opinion of Airspace Regulation, unbalanced and would not maintain a high standard of safety.

Option 4 – Amend the Base Levels of the CTAs

18. **The following is a summary of RHADS' Report on this option:** Whilst analysing each CTA for Option 3 above, the Feasibility and Options Report identified some CTAs where some minor changes to the base levels are achievable. The RHADS PIR Review of SARG Options, 20 Sep 2016, retracts these suggested CTA base level rises previously deemed acceptable.

19. CTA 8 has a base level of 4,000ft AMSL, although currently a portion from 4,000ft to 4,500ft is released on request to the BGA. However the report states, '*RHADS are able to operate with a base altitude of 4,500ft AMSL and still provide protection to CAT using the airport*'. In addition '*since RHADS can operate with minimal disruption without this 500ft layer at the base of the CTA, consideration could be given to reverting this level back to Class G*'.

20. CTA 9 provides a similar function to CTA 8. The report concluded that *'in conjunction with CTA 8 the base level of CTA 9 could be raised to 4,500ft.'*

21. CTAs 4 and 7 are small fillets of airspace that increase the width of the CTA. The report states that *'since IFR traffic is not permitted to join downwind left for Runway 02 due to noise, the base level of CTA 7 and CTA 4 could be raised to align with those of CTAs 8 and 9.'*

22. **CAA Opinion.** It is the opinion of Airspace Regulation that, subject to a safety analysis, this option could increase utilisation of the airspace for other airspace users whilst maintaining a high standard of safety.

Option 5 – Convert CTAs to RMZs/TMZs

23. **The following is a summary of RHADS' Report on this option:** Whilst a reversion to Class G airspace would present the most dramatic change to RHADS, with potentially the greatest reduction in safety measures currently afforded to CAT, it may be possible to reduce the effects of this change by enhancing the Class G with another element of 'control'. One option could be to replace the Class D with an area, broadly similar in size to the existing CTR plus CTAs 1, 2, 5 and 6 and adding either a Radio Mandatory Zone (RMZ) or a RMZ in conjunction with a Transponder Mandatory Zone (TMZ). Although these options would reduce the ability to 'control' aircraft when compared to Class D airspace, this would represent a far better situational awareness than pre-2008. The RHADS controllers would be able to operate within a 'better informed' traffic environment. This option provides the most benefit to GA VFR aircraft although VFR aircraft are subject to certain conditions in order to utilise the airspace. The requirement for VFR traffic to avoid IFR traffic under the 'see and avoid' principle will remain the same. Whilst ATC may attempt to coordinate with VFR traffic, there is no obligation to comply and there will be an additional tariff of increased controller workload, which in itself represents a degradation of safety.

24. From a VFR perspective there is little difference between operating within a Class E RMZ/TMZ, or a Class G RMZ/TMZ. There is still the requirement to call prior to entry, and the requirement to maintain separation under the 'see and avoid' principle'. However, from the IFR and the ATC perspective, there is a significant difference. Class G means provision of the ATSOAS suite of services: Deconfliction Service (DS), Traffic Service (TS) or Basic Service (BS). CAT IFR aircraft are highly likely to request a DS, which means that the controller is still obliged to maintain standard separation minima from VFR traffic.

25. The reversion to Class G with the addition of an associated RMZ/TMZ would add a higher degree of situational awareness, but it does not provide the mechanism to apply active control measures to enhance safety. Class G would result in significant increases in controller workload.

26. **CAA Opinion.** The RHADS report considered this option with both the CTR and CTA reverting to Class G with a TMZ/RMZ; however, it is the opinion of Airspace Regulation that the CTR should remain Class D and therefore this option is considered with only the CTAs changing.

27. To align with the CAA principle that the least restrictive categorisation of airspace should be the norm in UK airspace design, with more restrictive classifications only being established where necessary when the safety need is clearly demonstrated, the use of RMZs and TMZs should be considered. TMZs and RMZs look to provide additional measures to flight safety where a more restrictive classification of airspace is not warranted, and are considered in this option against a background airspace classification of Class G. These proportionate measures offer a more flexible approach, and are designed and routinely selected individually rather than together.

28. Converting the CTAs to RMZs reduces the restrictions placed upon the GA community over the current Class D CAS, although it is acknowledged that a proportion of airspace users in this location would still be unable to operate within an RMZ as a radio fit is required. In addition it does not create a 'known traffic environment' which RHADS ATC desire, more a 'better informed' environment which would undoubtedly increase controller workload when operating IFR CAT

around VFR GA traffic. There are obvious benefits of access to GA traffic, but these are limited as it is still restrictive to non-radio equipped airspace users. Furthermore the ability to use Airborne Collision Avoidance Systems (ACAS) is restricted as non-transponding VFR traffic could be operating within the RMZ.

29. Converting the CTAs to TMZs does allow the use of ACAS systems. It also creates a 'known traffic environment', albeit with potentially limited benefits for ATC. Whilst pilots are required to operate a serviceable transponder they are not required to talk to ATC or be radio fitted, hence removing the ability to co-ordinate in some situations. A TMZ is arguably more beneficial to RHADS ATC than an RMZ, however there is a greater imposition placed upon GA. Mandated transponder carriage is not a requirement in Class G airspace. Many GA aircraft are not able to, or reluctant to fit and carry a transponder owing to cost, weight, size etc, and arguably as gliding and soaring is prevalent in this area more GA would be refused entry to the airspace under this option than an RMZ.

31. This is discounted in the RHADS Feasibility and Options Report owing to the potential increase in R/T and re-routeing of CAT creating an increase in controller and pilot workload, subsequently leading to a claimed reduction in flight safety and economic benefits, and in the opinion of Airspace Regulation considering the increased number of CAT flights this option would have a disproportionate negative impact on airspace users operating to and from RHADS.

Option 6 – Reclassification of Airspace

32. **The following is a summary of RHADS' Report on this option:** Class E airspace is CAS which has different operating rules to those that pertain to Class D airspace. The key difference is that VFR aircraft do not require an ATC clearance to enter Class E CAS. Therefore, as the controller may not be talking to the VFR aircraft, its intentions will be unknown and therefore traffic information (TI) to IFR aircraft will not be complete. Even if the pilot does speak to ATC and inform RHADS of their intentions, the aircraft is not bound to comply with any restrictions or instructions that ATC may suggest, even if these suggestions are in the interests of safety. Controllers may feel that under a duty of care, and in preservation of their licenses, it may be prudent to delay IFR aircraft if an 'unknown' VFR aircraft is operating autonomously within the predicted departure or arrival path. This will affect the smooth flow of air traffic to and from the airport. Gliders will also be able to legitimately operate much closer to the commercial traffic than at present without the requirement to advise ATC of their presence. Gliders are often difficult to detect by Primary Surveillance Radar (PSR), and since most do not carry transponders, no TCAS information will be generated, so CAT may be completely unaware of glider location, as TI may not necessarily be passed. A change to Class E would represent a reduction in the current safety layers afforded to CAT and VFR traffic currently operating within the vicinity of RHADS.

RMZ

33. There is the possibility to enhance the benefits of Class E airspace by the addition of a RMZ, coincident with the Class E areas. This option would provide controllers with a greater situational awareness however IFR traffic is still relying on VFR traffic to avoid it. Controller workload could increase significantly and as well as the environmental impacts of increased track miles, increased fuel burn, lack of CDA's and an increased noise footprint, the reduced consistency and plannability would severely restrict airline operators.

TMZ

34. The addition of a TMZ creates a more 'informed' environment than Class E in isolation or a Class E RMZ, since only VFR aircraft fitted with a transponder and those having established 2-way contact with ATC may enter the airspace. This option provides similar situational awareness to the Air Traffic Controller as Class D. Controllers are only obliged to separate IFR from IFR and traffic information can be passed on VFR traffic, as their intentions will be known. However, controllers are required to provide "Duty of Care" separation between IFR and VFR traffic and because the VFR traffic is not required to comply to any ATC requests the IFR traffic will be manoeuvred to maintain separation from the VFR traffic. Again, this would increase the controllers workload and as well as the environmental impacts of increased track miles, increased fuel burn, lack of CDA's and an increased noise footprint, the reduced consistency and plannability would severely restrict airline operators.

RMZ/TMZ

35. If Class E RMZ/TMZ CAS were to be implemented, maintaining the current layout of airspace would make transition to the new airspace easier, as local users would be aware of the current boundaries. There would be no change to the existing CTR, so IFR aircraft could be assured of the same levels of protection during the most critical stages of flight. Class E is internationally recognised CAS. Therefore, all non-UK based users of the airport would understand exactly what types of service are offered and their responsibilities within the airspace.

36. It should be noted that, whilst this option allows for greater freedom for VFR traffic, this is likely to increase the workload of the controller. Although the rules state that there is no requirement to separate IFR and VFR traffic (as is the case in Class D airspace) the controller is under a duty of care to protect the IFR aircraft and will no doubt be considering the protection of their ATC licence and therefore separation will be applied. Where aircraft are not bound to comply with ATC instructions (VFR in Class E) this could involve re-routeing or extended negotiation via the RT, all of which will increase workload for pilots and controllers alike. For these reasons Class E RMZ/TMZ CAS would reduce flight safety and the economic viability of the airport and is not considered appropriate to RHADS operations.

37. **CAA Opinion.** CAA policy is that CTRs should be either Class A or D airspace; however the airspace classification of CTAs should be that of the least restrictive unless a clear safety need is demonstrated, therefore reclassification of the CTAs to Class E could be considered in the future.

38. An immediate benefit of this option is that reclassification to Class E airspace means that the SIDs remain contained within CAS and therefore no safety case is required to justify SIDs without CAS as detailed in the CAA Controlled Airspace Containment Policy. Understandably this was a principal concern raised by RHADS with a perceived significant reduction in safety operating CAT in Class G airspace rather than CAS.

39. The main difference between Class D and E airspace is that VFR flights do not require an ATC clearance to enter Class E airspace. In the UK VFR pilots are strongly advised to contact the appropriate Air Traffic Service Unit and comply with ATC but this is neither mandatory nor necessarily achievable by all aircraft. Whilst an obvious benefit to GA, with no requirement for VFR aircraft to carry a transponder or radio, Class E airspace loses a primary benefit to CAT and ATC of being a 'known traffic environment'. In the case of RHADS a concern of the airport is the high proportion of glider activity this would allow to operate in close proximity to CAT with no requirement to inform ATC of their presence and who are also frequently difficult to detect on radar without a transponder. To balance the proportional benefits afforded to GA and CAT whilst not degrading safety or requiring a separate safety case, Class E airspace can be enhanced by incorporating other airspace design tools.

RMZ

40. To mitigate against non-radio equipped VFR traffic conflicting with CAT, an RMZ could be applied to the Class E CTAs. This would ensure that all VFR traffic establishes 2-way communications stating their intentions prior to entering the CTAs. Whilst enhancing situational awareness for the controller, this does not address the concerns regarding gliders, nor maintain track identification of VFR traffic to either pass traffic information or establish co-ordination, as there is no requirement for aircraft in an RMZ to be transponder fitted. In addition the increase in workload for ATC could be significant, creating disproportionate benefits in this instance. In the case of RHADS, Airspace Regulation does not believe Class E RMZ CTAs alone would provide proportional benefits to all airspace users whilst maintaining the required level of safety.

TMZ

41. Incorporating a TMZ within the Class E CTAs would mandate transponder carriage for all VFR traffic. This re-establishes a 'known traffic environment' allowing some level of traffic information to be passed to CAT on all VFR traffic, as well as allowing the use of ACAS systems. Whilst providing additional measures to flight safety, the benefits to CAT and ATC are limited owing to the potential lack of ability to communicate with a VFR pilot and establish intentions or request co-ordination. It is the opinion of Airspace Regulation that whilst this option would likely maintain a high standard of safety, in this specific case Class E TMZ CTAs alone would not provide proportional benefits to all airspace users.

Listening out squawk/frequency

42. A limitation of the TMZ is the possible lack of ability to request co-ordination with the VFR traffic, or at least request an aircrafts intentions. By increasing the traffic levels within the CTAs with the introduction of VFR aircraft, CAT will undoubtedly be required, on occasion, to take avoiding action to route around conflicting traffic. By utilising a 'listening out squawk' (frequency monitoring code) and supplementing the TMZ with a 'listening out frequency' the ability for ATC to communicate with VFR traffic which is also radio equipped would be achieved. Whilst agreeing to co-ordination is not mandatory for VFR aircraft, it would be an exception for an aircraft not to agree, and therefore the requirement for CAT to perform avoiding action would be significantly reduced. In addition, by requesting routing or intentions, more informed traffic information can be passed to CAT or used by ATC as a planning tool.

43. A listening out squawk differs from a combined TMZ/RMZ. Whilst both options require VFR traffic to be both transponder and radio equipped within the CTAs, nigh on replicating the protection afforded by Class D airspace but allowing VFR traffic the ability to transit or operate in the airspace, a combined TMZ/RMZ creates a situation where every GA aircraft has to call ATC. In this instance with such a large volume of airspace this has the potential to create 'frequency saturation' and create a disproportionate burden on ATC. With the continued uptake in Mode S transponders, ATC have the ability to interrogate individual aircraft of interest, utilising the callsign if they wish to attempt co-ordination or ascertain intentions.

44. Airspace Regulation has considered the range of alternative options, as set out in RHADS' Feasibility and Options Report, and is of the opinion that, taking into account the increased number of CAT flights and the geographical location of the airport, a combination of these options as follows would reflect future airspace strategy, developing thinking, modern airspace design techniques and the CAA's statutory duties¹⁶:

- CTAs 1 & 2 and the CTR would remain Class D airspace to provide additional protection to aircraft in the critical stages of flight
- All other CTAs would be reclassified to Class E airspace supplemented by a listening out squawk

¹⁶ See Transport Act s.70

- The base levels of the CTAs would be raised as in Option 4 above.

The feasibility of this combined option would be subject to full analysis, including a safety assessment and no action is currently proposed by the CAA in respect of this or any of the above-mentioned options. In addition, prior to implementing Class E CTAs in UK Airspace, UK guidelines and documentation such as CAP 493 (Manual of Air Traffic Services Part 1) require updating.