Doncaster Sheffield Airport: Airspace Change Proposal

Proposal to introduce RNAV Standard Instrument Departure and Instrument Approach Procedures

PART B

Operational Report

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1. Introduction

1.1. This ACP, triggered by the withdrawal of the GAM VOR, is a proposal by DSA to replace the existing conventional SIDs and the outdated PDRs with RNAV-1 (GNSS) SID procedures designed to provide controlled airspace linkage for aircraft departing from DSA to enter the ATS route network. It is considered that an additional portion of controlled airspace (CAS) is required to achieve containment of the ROGAG SIDs. As the SIDs are not a full replication of the existing procedures, it is proposed that the Noise Preferential Routings (NPRs) be amended to be coincident with the proposed departure profiles. No further changes to the Noise Abatement Procedures are proposed. The proposal also includes the intention to introduce a suite of RNAV IAPs to complement the existing ILS procedures.

1.2. **Part B** of the ACP document is the Operational Report and provides a description of the proposed changes and justification for them. It details the operational and environmental objectives to be achieved with the SIDs and how the proposed procedure designs have been developed and largely integrated within the airspace arrangements. It also details how the environmental objectives have been balanced against the operational and flight safety requirements in the configuration of the procedures, both in the general development of the SID procedures and in specific terms for each procedure.

1.3. This part of the ACP relies heavily on the documentation provided for the Consultation Phase of the ACP development, which comprises the Stakeholder Consultation Document together with its technical Annexes, which detail each SID procedure individually, and the Post-Consultation Report.

1.4. The above documents are submitted separately as part of the ACP, as detailed in **Part A** of the ACP document bundle. In order not to create excessive duplication between this document and the supporting documents, cross-referencing to information contained in the supporting documents is made to the maximum extent practicable. The narrative in this document amplifies, where necessary, the technical procedure design aspects in greater detail than was appropriate to the Stakeholder Consultation Document and Report to enable the CAA to carry out its Operational and Environmental Assessments of the proposal.

1.5. As there was a Supplementary Consultation that focused upon the classification of the additional portion of CAS, the associated documentation is also submitted.

1.6. The ACP project commenced with a 'kick-off' meeting with the CAA in December 2016 followed by a Framework Briefing on 1 February 2017. **Documents 1 and 2** in the ACP Document Bundle are the Framework Brief Presentation and the associated Minutes. The development of options for the proposal was iterative and engagement with key stakeholders took the form of a series of Focus Groups with ATM, airline, aviation and community representatives held between February and August 2017. The 13-week Stakeholder Consultation ran from 25 September to 22 December 2017 and the Post-Consultation Report was published on 12 February 2018. The Supplementary Consultation ran for four weeks from 10 May to 7 June 2019. Details of the engagement and consultation activities are given in **Part D** of the ACP.

2. Airspace Description

2.1. Departure Procedures

2.2. DSA currently has three conventional SIDs (for aircraft joining airways at UPTON) and three PDRs (for aircraft joining airways at ROGAG), all of which are predicated on the GAM VOR.

2.3. The current UPTON SIDs are detailed in the UK AIP at AD 2-EGCN-6-1 and are reproduced at **Appendix B** for ease of reference. Two of the SIDs originate from Runway 20, the other is for Runway 02. The reason for two UPTON SIDs off Runway 20 is to provide an alternative, non-conflicting, departure profile for the eventuality that there is gliding activity in the Upton Corridor. It is proposed that this arrangement is maintained to preserve the protection afforded to the gliding community. More detail on the arrangements with local gliding groups can be found in the MATS Part II, Section 4 Appendices.

2.4. The three ROGAG PDRs were implemented as PDRs as opposed to SIDs as there was insufficient controlled airspace granted to DSA to contain the procedures when they were originally proposed. The terminology PDR was used by the CAA to clearly differentiate PDRs from SID procedures. SID procedures were specified for use only in a wholly controlled airspace environment. Similarly, PDRs were not charted in the UK AIP, their publication being in text format only with suitable safeguarding text to emphasise to pilots that these procedures were outside CAS and were not SID procedures. The basic differences between PDRs and formal SID procedures are outlined in the Stakeholder Consultation Document.

2.5. The current ROGAG PDRs (one for each runway) are detailed in the UK AIP at AD 2-EGCN-15 Section 6 (b) 'Procedures for Outbound Aircraft' and are reproduced at **Appendix B** for ease of reference. *Note: The ROGAG 20 North PDR will be withdrawn as it has rarely been used and is no longer required.*

2.6. In this ACP DSA proposes to replace these five procedures with five RNAV-1 SIDs. The proposed SID procedures are:

- UPTON 2A to replace UPTON 1A;
- UPTON 2B to replace UPTON 1B;
- UPTON 2C to replace UPTON 1C;
- ROGAG 1A to replace the ROGAG 20 South PDR; and
- ROGAG 1C[1] to replace the ROGAG 02 PDR.

2.7. The objectives for the design of the SID procedures and the detailed description of each procedure are detailed in the subsequent paragraphs. Draft SID charts are depicted at **Appendix C**. Note that these procedures differ slightly from those consulted upon. The

[1] Note that in Version 1 of the ACP submission this was referred to as ROGAG 1B but is now referred to throughout as ROGAG 1C.

differences and the rationale behind the changes can be found within the 'Impact Assessment', (**Document 62**) in the ACP bundle.

2.8. DSA is committed to providing all operators who use the airport an appropriate instrument departure procedure that ensures the minimum obstacle clearance. As not all operators are able to meet the minimum navigation performance for RNAV-1 SIDs, DSA proposes the introduction of an Omni-Directional Departure (ODD) for each runway to safeguard departures against obstacles in the initial departure area. Aircraft will be issued an ODD together with appropriate ATC instructions to access the Terminal and Network ATM systems if they are either:

- non-RNAV-1 capable;
- non-GNSS equipped; or
- not capable of complying with the demands (climb gradients) of the SID procedures.

2.9. The usage of the ODDs is expected to be very low as an average of less than 3 aircraft per month are currently unable to comply with the current SIDs over the last 12 months. **Document 6** in the document bundle is a summary of the findings of the Equipage Survey.

2.10. A detailed description of each proposed SID is given in the **Stakeholder Consultation Document** and it's supporting **Annexes** and is amplified in **Section 3** of this ACP document. The hours of operation of the SIDs will not change from the current airport operating hours.

2.11. Approach Procedures

2.11.1. DSA currently has an array of conventional approach procedures as detailed in the UK AIP at AD2-EGCN-8. The Instrument Landing System (ILS) will remain the primary approach aid for aircraft carrying out an instrument approach at DSA. Given that many CAT aircraft are no longer equipped with NDB navigational capability, the new RNAV (GNSS) IAPs will provide the redundancy required for continued operations when the ILS is out of service.

2.11.2. Following research and engagement with the operators, DSA propose the introduction of the following RNAV IAPs for each runway:

- Lateral Navigation (LNAV);
- Lateral Navigation with Vertical Guidance (LNAV/VNAV); and
- Localiser Performance with Vertical Guidance (LPV200).

2.11.3. The combination of the airspace layout, the inbound routing infrastructure, and the proximity of nearby airfields and gliding areas does not lend itself to a standard "T" or "Y"-Bar design for these RNAV IAPs. Thus the 'best fit' design that is proposed for DSA is an approach design extending from the landing runway end out to a 10NM final approach point. This design also 'replicates' the existing ILS Approach path. The RNAV IAPs will have only two points defined on them, the first is the Intermediate Fix (IF) and the second a Final Approach Fix (FAF). *Note: In this instance, the Initial Approach Fix (IAF) and the IF are coincident.*

2.11.4. The final approach track of the proposed RNAV IAPs replicates that of the existing ILS procedures. There is little expected change to how aircraft will track over the ground when flying the RNAV IAP resulting in minimal change to the impact on the environment. Draft IAP charts are depicted at **Appendix C**.

2.11.5. Due to the procedure design criteria for RNAV IAPs detailed in ICAO PANS-OPS, it is not possible to replicate the existing conventional MAPs as RNAV procedures. The proposed MAPs for the RNAV IAPs are also depicted on the Draft IAP charts.

2.12. Airspace

2.12.1. DSA currently has a CTR and several portions of CTA, all of which hold Class D classification. The existing airspace is depicted in the UK AIP at AD 2-EGCN-4-1 and are reproduced at **Appendix B** for ease of reference.

2.12.2. There are no proposals to make changes to the dimensions or classification of the existing controlled airspace for the UPTON SIDs as the connectivity to the route network remains uninterrupted as is the case today. The Post Implementation Review (PIR) of the existing DSA Class D airspace, completed in June 2017, confirmed the justification and configuration of this airspace.

2.12.3. It is noted that CAA Policy[2] allows for SIDs to be designed in a manner that does not provide CAS containment provided that a suitable safety case is made. However, there are numerous General Aviation (GA) airfields in proximity to DSA generating a diverse array of airspace operations, much of which is not conspicuous by means of a transponder. Therefore, DSA considers that the protection of CAS must be afforded to Commercial Air Transport (CAT) traffic flying under IFR, particularly in the critical stages of flight and to enable the effective integration of the diverse airspace activities. DSA does not consider that an acceptable safety case could be established which would support the operation of SID procedures outside CAS.

2.12.4. It is important to note that the original introduction of Class D airspace improved safety not just for the CAT operators but also for all aircraft operating within it as a 'known traffic environment' prevails. Since its introduction, the number of AIRPROX reports between CAT operating from DSA and VFR aircraft in the immediate vicinity of the Airport has substantially reduced.

2.12.5. In the original ACP submission, DSA proposed that an additional volume of airspace to the south-east of DSA (described as CTA-X in the Stakeholder Consultation Document and CTA-13 in the Supplementary Consultation material) be established to fully contain the new ROGAG SIDs together with a minor amendment to a portion of the airways designated L60 and L603 (a lowering of a portion of them) to further support the airspace containment of the ROGAG SIDs.

2.12.6. Owing to the perception that there was a relatively small number of Commercial Air Transport (CAT) aircraft utilising the ROGAG procedures currently, the CAA and various aviation stakeholders deemed that the original proposal for an additional volume of CAS, in the form of a Class D CTA (intended to contain the ROGAG SIDs), was disproportionate. DSA

[2] CAA SARG Policy Statement 'Controlled Airspace Containment Policy' dated 17 January 2014

remains of the view that Class D is the most appropriate classification of airspace and remains unconvinced that the request is disproportionate. Nevertheless, DSA recognises that compromise is required for this small volume of additional airspace to address the concerns expressed by some airspace users in the consultations.

2.12.7. Without prejudice to this, however, DSA now proposes that CTA-13 be established and classified as a Class E CTA that should also be defined as a combined Transponder and Radio Mandatory Zone (TMZ/RMZ). The combination of a TMZ/RMZ is expected to result in a 'known traffic environment' or, at the very least, a 'better informed traffic environment'. DSA maintains its position on the proposal to lower a portion of L60 and L603.

2.12.8. Class E with the addition of TMZ and RMZ should result in a safer environment for all airspace users than the existing Class G used by the aircraft following the PDRs and indeed, the other variations of Class E were they to be implemented.

2.12.9. Although IFR aircraft will require an ATC clearance to enter, VFR aircraft will not need an ATC clearance to enter CTA-13, they will simply be required to be in two-way communication with the operating authority on the prescribed communication channel prior to entering it having passed the following information:

- Designation of the station being called;
- Aircraft callsign;
- Type of aircraft;
- Position;
- Level;
- Intentions; and
- Any other information as prescribed by the competent authority.

2.12.10. The pilot shall maintain continuous air-ground voice communication watch, on the appropriate communication channel, unless in compliance with alternative provisions prescribed for that particular airspace by the Controlling Authority; however, a pilot wishing to operate in an RMZ without the necessary radio communication equipment may be able to do so in accordance with conditions promulgated for the specific RMZ, or in accordance with agreed tactical arrangements with the RMZ Controlling Authority[3].

2.12.11. Furthermore, the TMZ element will require the carriage of radio navigation equipment (capable of operating in Modes A and C, and have the capability and functionality prescribed for Mode S.6.2). All flights operating in the TMZ shall carry and operate Secondary Surveillance Radar (SSR) transponders capable of operating on Modes A and C or on Mode S, unless in compliance with alternative provisions prescribed for that particular airspace by the ANSP; however, a pilot wishing to operate in a TMZ without serviceable transponder

[3] This may typically require the pilot of a non-RT aircraft to contact the RMZ Controlling Authority prior to departing, stating the route information detailed above and estimated RMZ exit and entry times and prevailing traffic conditions may preclude RMZ Controlling Authority approval to non-radio aircraft (or an aircraft with a non-functioning radio) to operate within a RMZ.

equipment may be granted access subject to specific arrangements agreed with the TMZ Controlling Authority[4].

2.12.12. The CAA Policy Statement on RMZs and TMZs[5] states in paragraph 1.3 that the creation of them *'…allows for enhanced situational awareness for all users and for ATC. This therefore increases safety for all aircraft flying in that block of airspace while imposing minimal additional restrictions.'*

2.12.13. The Policy Statement goes on to state in paragraph 3.1 that:

'All airspace users should have reasonable and safe access to airspace. RMZs and TMZs are utilised to enhance the conspicuity of aircraft operating within or in the vicinity of complex or busy airspace for the safety of all members of the flying communities.'

2.12.14. Rationale for the implementation of a combined RMZ/TMZ within Class E airspace include (as compared to Class G or Class E without the airspace tools of RMZ/TMZ):

- Increased situational awareness for ATCOs enabling the provision of 'Traffic Information' to aircraft (traffic information is available to VFR aircraft on request and can assist them in the avoidance of IFR aircraft);
- Knowing VFR aircraft intentions through radio contact assists ATCOs in decision making as they provide separation for IFR aircraft;
- Allows for the full utilisation by equipped aircraft of Airborne Collision Avoidance Systems (ACAS); and
- A reduction in the presence of unknown 'primary-only' radar returns within the volume of airspace.

2.12.15. Implementation of this proposal will ensure a CAS linkage from DSA to ROGAG and will provide an efficient airspace environment satisfying the Air Navigation Service Provider's (ANSP's) Safety Management System (SMS)[6]. It will facilitate the effective integration of the increasing numbers of DSA CAT operations to/from the east with the diverse activities of various other airspace users.

2.13. Airspace – CTA-13

2.13.1. The vertical and lateral (WGS84 – UTM30N) elements of the proposed **CTA-13** are presented in **Table 1**:

[4] This may typically require the pilot of an aircraft without a serviceable transponder to contact the TMZ Controlling Authority prior to departing, stating the route information detailed above and estimated TMZ exit and entry times and prevailing traffic conditions may preclude TMZ Controlling Authority approval to aircraft not equipped with transponders (or an aircraft with a non-functioning transponder) to operate within a TMZ.
[5] CAA SARG Policy Statement 'Policy for Radio Mandatory Zones and Transponder Mandatory Zones' dated 14 August 2015
[6] See **Document 63** in the ACP Document Bundle, the ATCSL Safety Assessment.

Latitude	Longitude	Vertical	Classification
532531.0591N	0005036.9470W	FL85-FL105	E (TMZ/RMZ)
531433.9864N	0004258.4795W	FL85-FL105	E (TMZ/RMZ)
531342.880N	0004325.205W	FL85-FL105	E (TMZ/RMZ)
531600.08N	0005542.38W	FL85-FL105	E (TMZ/RMZ)
532531.0591N	0005036.9470W	FL85-FL105	E (TMZ/RMZ)

Table 1: Vertical and Lateral confines of the proposed CTA-13

2.13.2. This portion of airspace aligns to the minimum climb gradient of the ROGAG SIDs, allowing 500 feet for vertical containment, to provide continuous climb and permitting adequate separation from traffic transiting below, i.e. the procedure requires FL90 on the boundary of CTA-13 with a base level of FL85. To reach FL90 by CNS06, the minimum procedure climb gradient for the ROGAG 1C is 7.2% and for the ROGAG 1A it is 9%. From waypoint CNS06 the proposed SID procedures share a common track. The next point on the SIDs is CNS07 and subject to a proposed relaxation of the CAA's Safety Buffer Policy[7], through an LoA, aircraft may reduce their climb rate to a more acceptable level (between 8.4% and 8.5%) to achieve FL125 by waypoint CNS07. Beyond CNS07, the climb gradient reduces to 3.7% to ROGAG.

2.13.3. The 5-letter name code, 'LEDLA' has been reserved for waypoint CNS07.

2.13.4. The upper limit of CTA-13 is limited to FL105 adjoining PC airspace (L60/L603) above.

2.14. Airspace – L603/L60

2.14.1. In support of this proposal, DSA are sponsoring the airspace change associated with L60/L603 to ensure alignment of airspace requirements at implementation. NATS PC agreed ahead of the consultation that DSA would propose these changes to this portion of airspace as can be seen in **Document 28** of the document bundle. NATS PC also supported the changes in their response to the Stakeholder Consultation.

2.14.2. This application includes a proposal to lower the base of L603 and L60, (above R313) to allow the SID to be contained within controlled airspace to position ROGAG. This involves lowering that portion of the route airspace structure from LAMIX eastbound towards ROGAG from FL155 to FL125 (aligning the lower limit to above the required safety buffer above R313 with consideration to pressure variation). It is proposed that this lowering is for the portion from LAMIX to EVKAL. The volume of airspace associated with L603 whose base is proposed for lowering to FL125 is depicted in light green at **Figure 2**.

[7] CAA SARG Policy Statement dated 22 August 2014 – Special Use Airspace – Safety Buffer Policy for Airspace Design Purposes.

2.14.3. The airspace associated with L60, at a point northerly adjacent to LAMIX (i.e. NISBI), will also need to be lowered to FL125 as it overlaps. It is proposed that this lowering is for the portion between NISBI and ENCOD (depicted at **Figure 2**). The base level of Y70, north of L603 has a base level of FL125 and accordingly, there would be a very small fillet of airspace between the L603 and Y70 without a base level of FL125 unless this were to be aligned (red dotted triangle in **Figure 2**).

2.14.4. The vertical and lateral (WGS84 – UTM30N) elements of the proposal to lower a portion of **L603** and **L60** are presented in **Table 2**:

From	To	Vertical	ATS Route	Airspace Classification
LAMIX	**EVKAL** (new waypoint) 532531.0591N 0005036.9470W	FL195 FL125	L603	Class A
EVKAL	**ROGAG**	FL195 FL155	L603	Class A
NISBI	**ENCOD** (new waypoint) 531959.3227N 0002423.9263W	FL195 FL125	L60	Class A
ENCOD	**OTBED**	FL195 FL155	L60	Class A

Table 2: Proposed lowering of L603 and L60

2.14.5. The minimum climb gradient for the portion of the SID between CNS07 (LEDLA) and ROGAG is 3.7% and this proposal would allow most aircraft to remain inside controlled airspace in the climb towards ROGAG. Those incapable of achieving the required climb gradient (or indeed any other requirement of the ROGAG SIDs) will be issued an ODD and vectored to ensure airspace containment.

2.14.6. **Figures 1 and 2** overleaf illustrate the airspace configuration proposal in elevation and plan view.

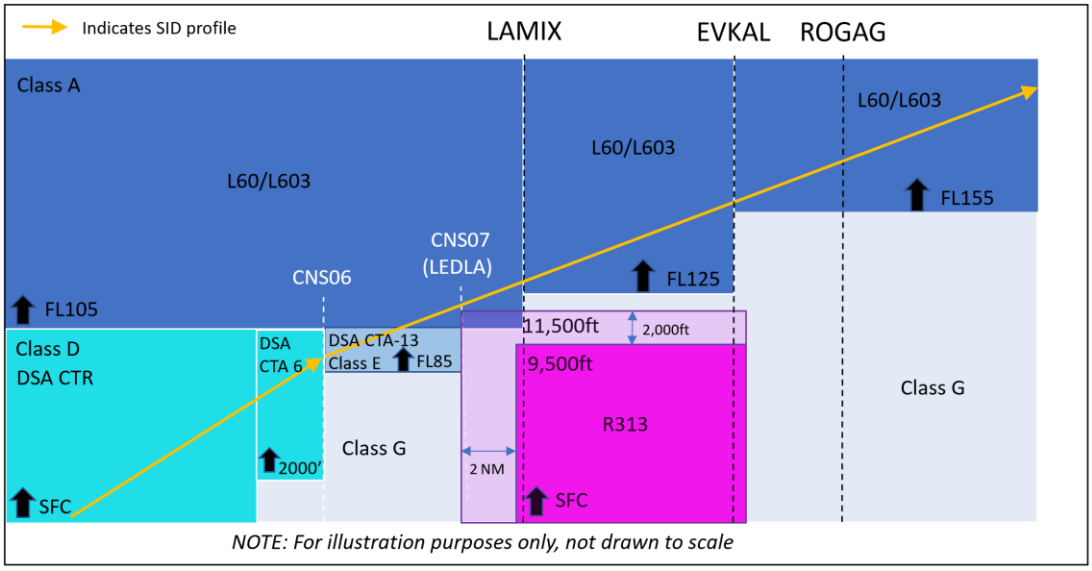

Figure 1: Elevation View of Proposed Airspace Configuration

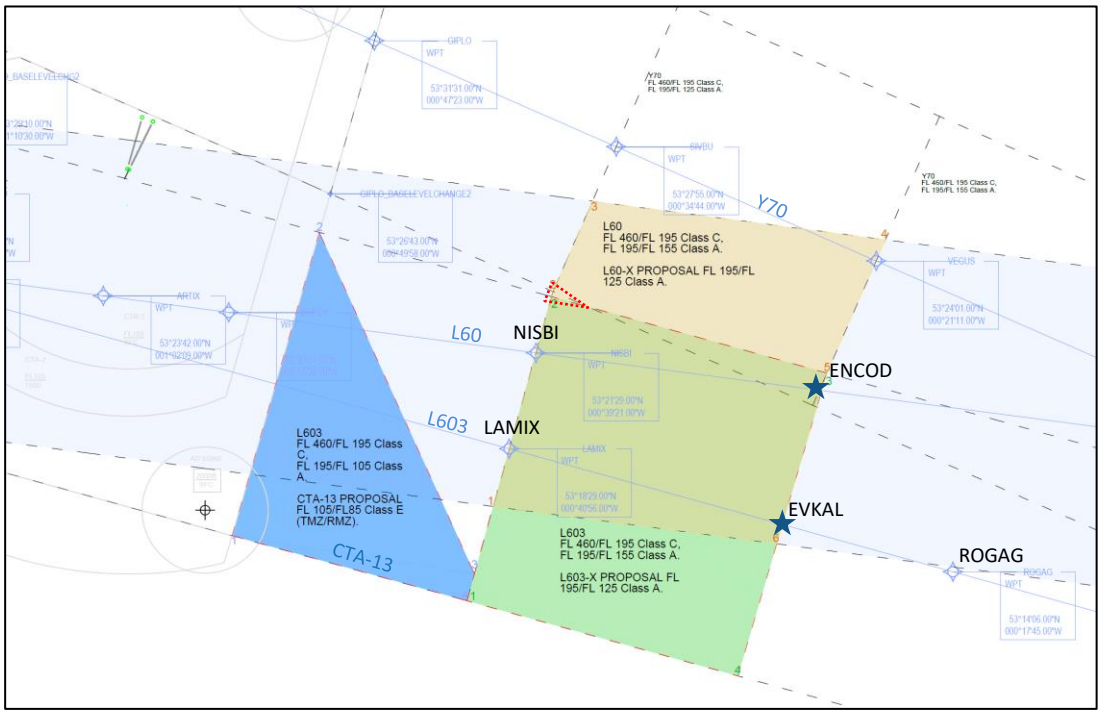

Figure 2: A Plan View of Proposed Airspace Configuration

2.14.7. The CAA SARG Safety Buffer Policy requires a lateral 5NM buffer around and a vertical 2,000ft buffer over R313 however it allows for 'Policy Dispensations' in para 3.1.

2.14.8. DSA engaged with the MoD, the CAA and Prestwick Centre over the airspace proposals and it was agreed that a Letter of Agreement (LoA) should be written between DSA ATC and the Ministry of Defence (MoD) to facilitate a reduction of distance between CTA-13 and the lateral limit of the Safety Buffer Zone of R313 from 5NM to 2NM (and for the corresponding vertical buffer to apply only from 2NM also), during published hours of R313 operation with

mitigating conditions in place. It remains the case that it is not the intent of this proposal to allow DSA flights to enter R313[8] during published hours of operations.

2.14.9. Supporting evidence of this engagement can be found at **Documents 20, 21, 23, 26, 27 and 28**. Since the completion of the Stakeholder Consultation, the LoA has been agreed in principle and the latest draft can be found as **Document 40** in the ACP bundle.

2.14.10. As stated above, the existing CTR and associated CTA surrounding DSA hold Class D classification. Class D airspace delivers a known and managed (VFR and IFR) ATC environment that allows VFR access to RT-equipped aircraft in an organised and orderly manner once two-way communication with the operating authority is established. It should be noted that the ANSP at DSA makes every effort to facilitate equitable access to the existing airspace under their stewardship. Logically, the presence of Class D airspace provides a safer environment for all airspace users than Class E. In the latter, VFR aircraft may penetrate and transit without a clearance, or use of radio and without transponding. Essentially, they can be either invisible to ATC, impossible to contact or both and, in any case, are not compelled to comply with any instructions issued by ATC to facilitate the effective integration of flights. Class D is the classification applied to all CTRs and most associated CTAs in the UK FIR at airports comparable in size and operation to DSA (i.e. all those that do not hold Class A status) and this is reflected in CAA Policy.

2.14.11. DSA has been advised by the CAA that Class D is a disproportionate request owing to the perceived use of the airspace by CAT aircraft on the ROGAG procedures (the airspace is designed to contain), when compared to other airspace users. DSA maintains its position that Class D represents the most appropriate response. However, without prejudice to this, DSA is prepared to downgrade its proposal such that the new CTA segment would be classified as Class E airspace. DSA amends its proposal on the basis that the unexpected presence of VFR traffic is mitigated by the requirement for aircraft to be in two-way radio communication and have a serviceable, functioning transponder. This would be achieved by adding the provisions of both a RMZ and a TMZ.

2.14.12. DSA previously considered and rejected the alternative of Class E airspace supplemented by a TMZ only. This was because such an arrangement would not enable ATC to marshal aircraft safely and expeditiously in a coordinated manner through the airspace as there would be no ability to effectively communicate with and 'manage' VFR itinerant traffic. Furthermore, VFR flights would be able to penetrate the airspace without prior communication with ATC. ATC would be required to treat such aircraft as "unknown traffic" and apply the increased radar separation minima applicable and would only be able to endeavour to achieve the specified separation minima through vectoring the IFR (CAT) aircraft off the SID track. The ability for controllers to comply with the vectoring requirements of keeping aircraft 2NM within the boundary of controlled airspace (in accordance with CAP 493, Chapter 6, Section 13A.4) would be compromised and a commensurately larger volume of controlled airspace might be needed to enable compliance. Therefore, DSA rejected further consideration of Class E airspace.

2.14.13. Whilst DSA maintains its position regarding the appropriateness of Class D airspace, it acknowledges that the addition of the RMZ element to the TMZ element of Class E airspace would mean that ATC can expect aircraft to call prior to entry and therefore are provided

[8] It is now understood that the MoD may wish to withdraw R313 as RAF Scampton is due to close in 2022.

some assurance that 'wandering' aircraft close to the boundary of the CTA are not going to enter without at least making contact first. The radio call would also enable controllers to establish the intentions of traffic entering the airspace and, in so doing, facilitate planning.

2.15. Airspace Access and Usage

2.15.1. DSA does not deny access to the existing Class D airspace by VFR or IFR itinerant flights or from conducting training operations within the CTR/CTA and is committed to providing equitable access to the all airspace under its jurisdiction. Such a culture of accommodating other airspace users shall continue in both the Class D and the newly proposed Class E TMZ/RMZ).

2.15.2. The contracted ANSP will continue to be adequately resourced, in line with forecast growth, to ensure the airspace is not managed 'by exclusion'. Records maintained since 2014 indicate that ATC is facilitating an average of more than 17,500 GA (per annum) aircraft in and around the DSA airspace with a majority being provided airspace crossings.

2.15.3. **Figures 3, 4 and 5** overleaf depict the track data from aircraft given a 6160 Mode 3A squawk (DSA VFR Zone transit code for aircraft under a Basic Service) taken from the months of July, August and September 2017 respectively. These clearly show that access is provided routinely and on a flexible basis.

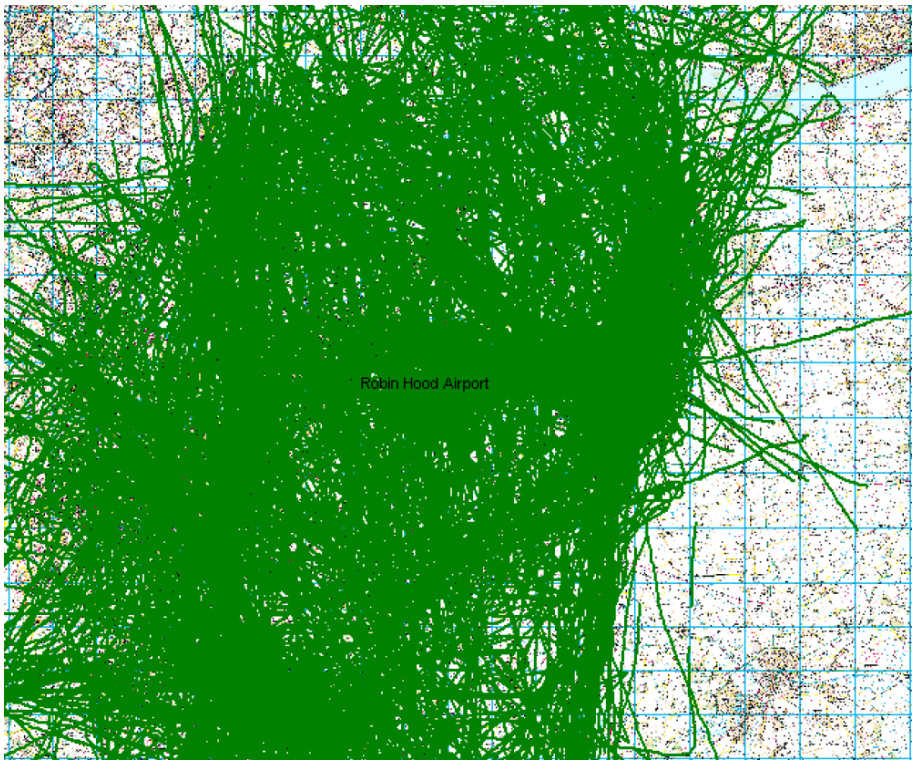

Figure 3: Track Data for Mode 3A 6160 - July 2017

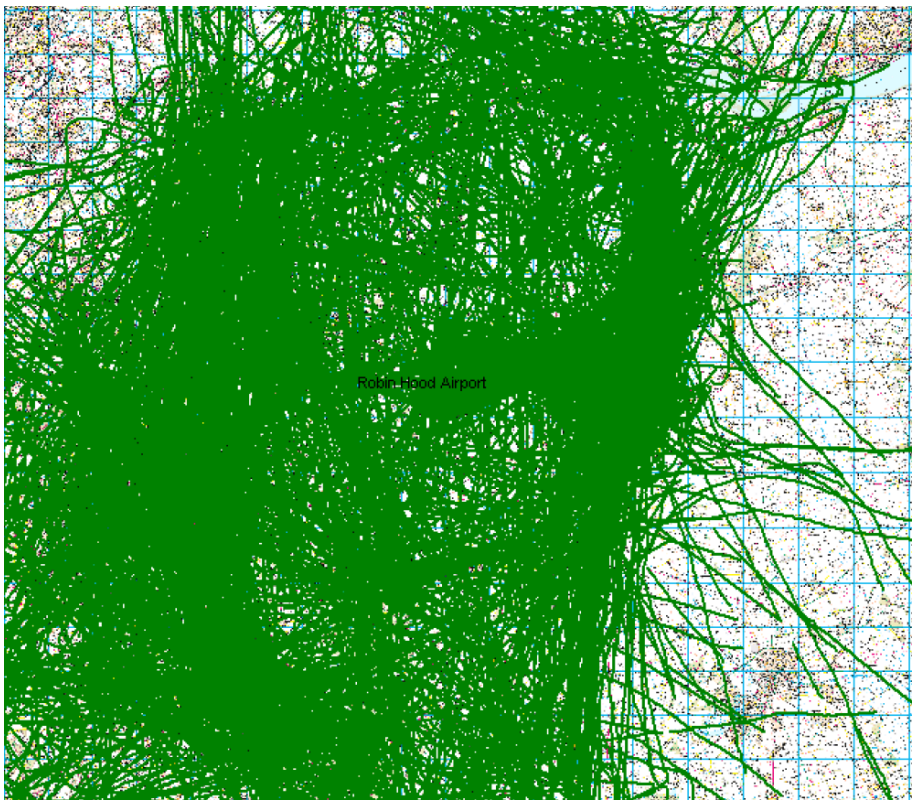

Figure 4: Track Data for Mode 3A 6160 - August 2017

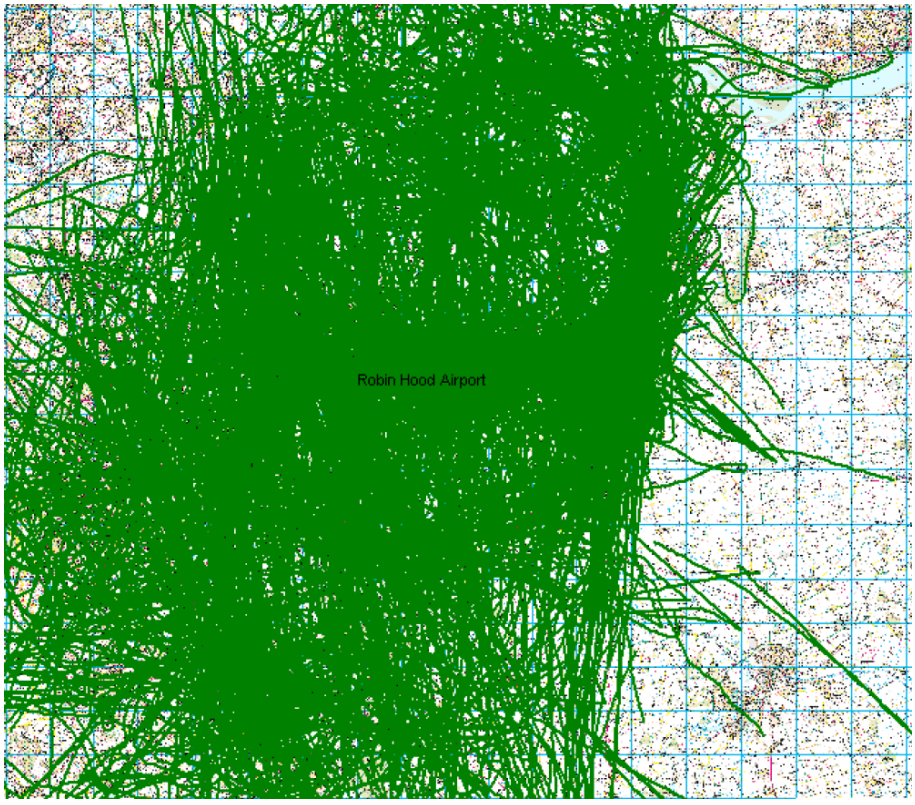

Figure 5: Track Data for Mode 3A 6160 - September 2017

2.15.4. Quantifying the usage of the volume of airspace depicted as CTA-13 by anything other than planned CAT operations has proved problematic for most stakeholders (ANSPs and aviators alike). This is largely because:

- The usage is often not declared, planned or scheduled, it is random and sporadic;
- Some do not speak to DSA ATC;
- Some do not carry transponders (the track data detailed at Figures 3-5 requires Mode 3A data – there is no record of 'primary-only' itinerant traffic);
- Of those that carry transponders, some do not squawk Mode C; and
- This traffic is not 'recorded' in the same way as CAT movements.

2.15.5. The MOD in their response to the Supplementary Consultation stated that:

'The airspace is used by military aircraft however the usage is not scheduled, nor is it recorded, therefore it is difficult to quantify how often this airspace is used.'

2.15.6. ATCSL investigated this matter using the ANOMS system to establish airspace usage by transponding traffic. ANOMS takes data from both SSR and ADS-B and the data was filtered to identify traffic in the altitude bracket of FL85-FL105. The Mode 3A codes in **Table 3** were identified as the most likely to be found in the region. **Table 3** also shows the number of tracks found with one of these Mode 3A codes in the period 1st October 2018 till 1st June 2019 (8 months). Unfortunately, as ANOMS cannot take a PSR feed, non-squawking traffic is not included in this data.

Code	No. of Squawks	Unit	No. of Tracks
7000	1	VFR	15
6160-6177	17	Doncaster Sheffield	5
4250-4277	27	Humberside	4
6040-6077	37	Swanwick	0
6101-6157	56	Swanwick	0
2601-2637	36	Cranwell	1
1730-1756	26	Coningsby	17
3601-3634	33	Waddington	16
		Total	**58**

Table 3: ANOMS data for period 1st October 2018 to 1st June 2019

2.15.7. As is evidenced by the data above and depicted in the graphics at **Figures 6, 7 and 8**, only 58 tracks used the airspace identified for inclusion as CTA-13 in just over 8 months. This equates to circa 7 aircraft per month (7.16) and less than 2 per week (1.67). Of the 58 tracks, 34 were squawking military unit codes, 15 were squawking 7000 (VFR) and 9 were squawking civilian unit codes.

2.15.8. The usage by 'Other Airspace Users' should be considered against the known usage of the ROGAG departure procedures. The ROGAG is used between 6 and 7 times per day on average, whereas, on average, 'Other Transponding Airspace Users' are using it twice a week.

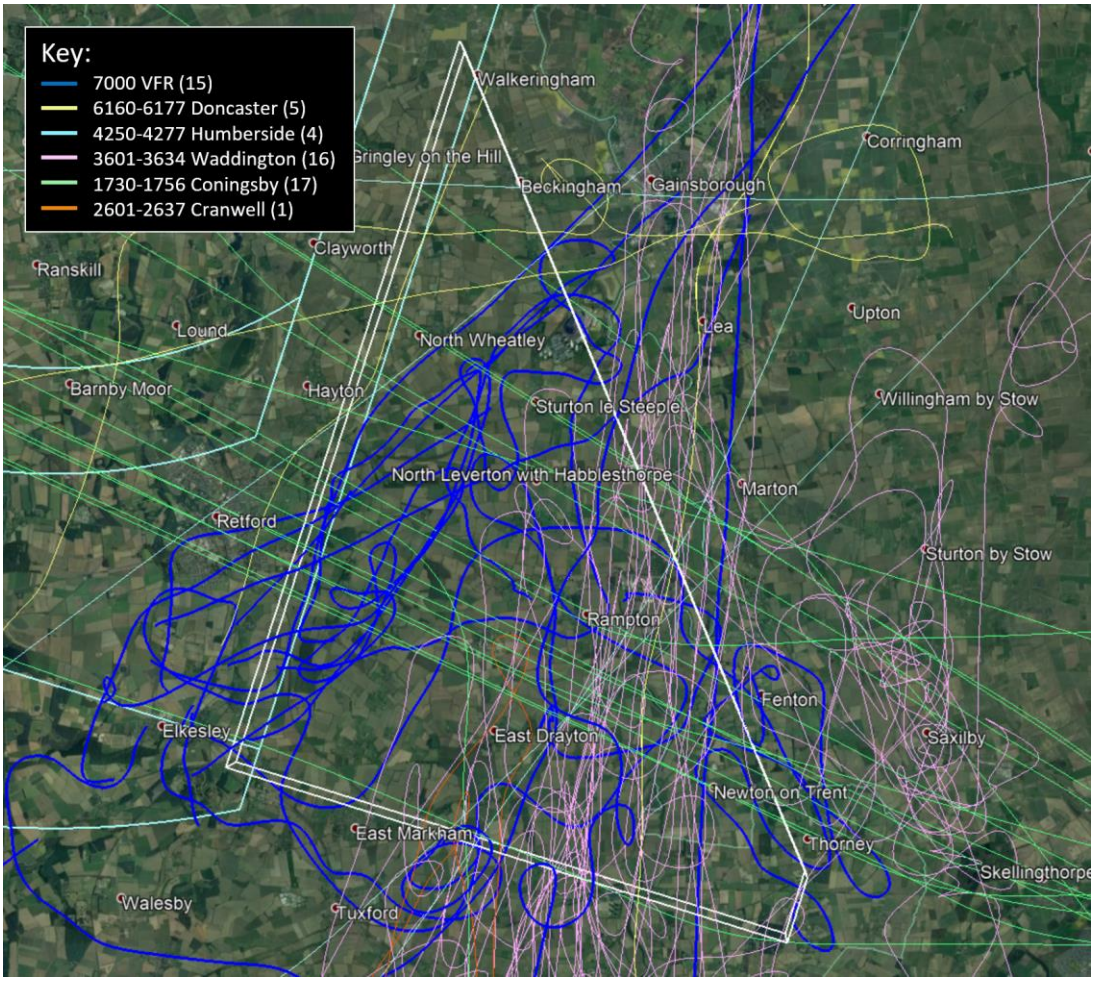

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Figure 6: All tracks from Table 3

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Figure 7: Tracks with Military Unit Codes

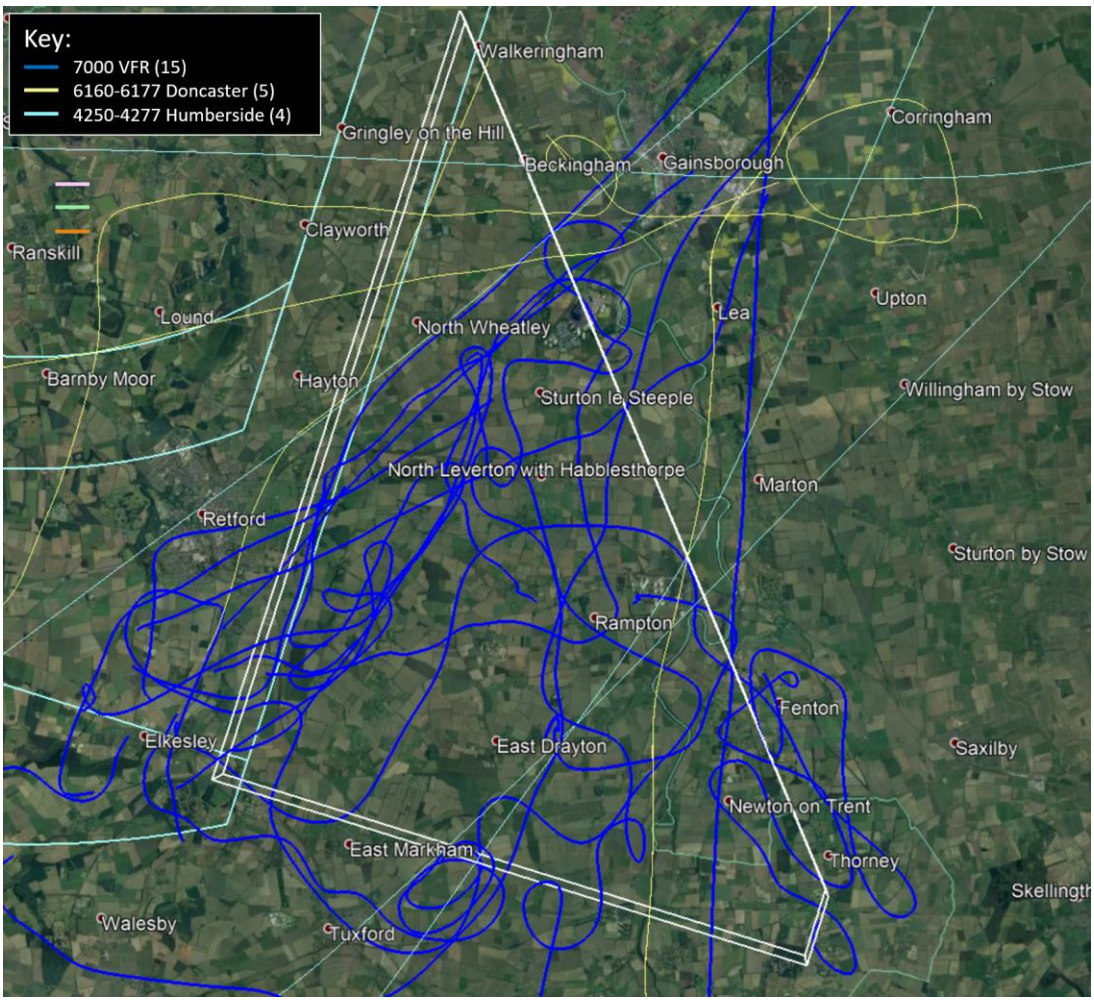

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Figure 8: Tracks with Civilian Unit Codes

2.16. Issues Raised in the Supplementary Consultation

2.16.1. The four main issues raised during the Supplementary Consultation in relation to CTA-13 are detailed in the Post-Consultation Report (**Document 72**). However, the following paragraphs address each issue in turn.

2.16.2. **Issue 1 – Class G not being presented as an 'Option'** - The Supplementary Consultation did not seek a view on whether or not there should be a volume of Controlled Airspace (CAS), rather it sought feedback on the classification of that volume of CAS should have. As Class G is not by definition, CAS, it was considered 'outside' the scope of the consultation and as such was not an 'Option'. The introduction of CAS (an additional CTA) was included in the original consultation and the views on this matter had already been reviewed.

2.16.3. **Issue 2** – **Adding Class E adds unnecessary complexity to the airspace** - DSA has sympathy with this view given the paucity of examples of Class E within the UK and especially given the very small volume of airspace that CTA-13 would represent. Nevertheless, there appears to be a broader national ambition of reducing airspace classifications to the least restrictive practicable. Whilst DSA does not agree with this philosophy, this is a small portion of airspace at a relatively high altitude. Accordingly, and without prejudice to its concerns (as

above), DSA is prepared to propose Class E in this position on the basis set out in this report. Pilots of CAT aircraft would need to be informed they were entering Class E airspace and, that they were leaving it again and some would not understand the implications of this. Most pilots (commercial and leisure) and controllers lack experience of operating in this classification of airspace and do not fully understand the rules. Accordingly, training in the associated rules and phraseology will need investment. This training should not only be the responsibility of the ANSPs and the airlines. National bodies and authorities should take responsibility for training GA pilots if Class E is to become common-place in the UK FIR. Notably, the most recent edition of 'The Skyway Code' (CAP1535), a document whose stated aim is to 'provide General Aviation pilots involved in non-commercial and flight training operations with practical guidance on the operational, safety and regulatory issues relevant to their flying', indicates that the only Class E airspace in the UK FIR is in 'Scottish Airways'. Despite stating a primary focus being 'Safe Aircraft Operations' and 'Safe Use of Airspace', it gives minimal detail to pilots on what to do when encountering Class E airspace or a RMZ or TMZ.

2.16.4. **Issue 3** – **Additional CAS was unnecessary** - Such comments fail to consider two aspects. Firstly, that in procedure design terms, it is not just the nominal track that must be contained but also the primary and secondary protection areas. These areas are arguably much larger than they need to be however these are not set by the designers, instead these are the design criteria laid down by ICAO. The initial designs for this ACP attempted to contain the ROGAG SIDs in the existing CAS but this resulted in a very demanding procedure. These initial designs were subject to a Ground Validation in a B737-800 simulator, the result was that the aircraft could not make the demanding climb criteria. Secondly, suggestions that aircraft should orbit in the vicinity of the Airport to gain sufficient altitude to be contained within the existing CAS fail to consider the environmental impact of such a procedure in terms of both noise (primary concern) and fuel burn with its associated emissions. The DfT ANG 2017, clearly lays down the environmental priorities in relation to airspace design i.e. that 'in the airspace from the ground to below 4,000 feet the government's environmental priority is to limit and, where possible, reduce the total adverse effects on people' and 'in the airspace at or above 4,000 feet to below 7,000 feet, the environmental priority should continue to be minimising the impact of aviation noise in a manner consistent with the government's overall policy on aviation noise, unless the CAA is satisfied that the evidence presented by the sponsor demonstrates this would disproportionately increase CO_2 emissions'. The 'orbital' route that would be required to keep aircraft contained within the existing CAS, as they climb to the required level to turn towards ROGAG, would keep the aircraft closer to communities near Doncaster, exposing more to aviation noise and, the fuel burn and emissions would also clearly increase owing to the additional track miles. Furthermore, the existing Route Network is structured such that eastbound departures from DSA must join to the south of the CAS i.e. on ATS Route L603 en-route to ROGAG. The northern portion of the CAS above DSA (ATS Route Y70) is utilised by descending westbound aircraft. It is beyond DSA's remit to attempt to change this and it would have a significant knock-on impact to en-route procedures and terminal procedures associated with other regional airports such as Leeds Bradford, East Midlands and Manchester.

2.16.5. **Issue 4 – That TMZ would preclude access for non-transponder equipped aircraft** - It is understood by DSA that the Government believes that conspicuity is an enabler required to unlock many of the benefits associated with the implementation of the Airspace Modernisation Strategy. CAP1711 states that it seeks a 'Fully interoperable electronic conspicuity solution' and that it is likely to be mandated by the CAA by 2022-2024. The CAA

is consulting on this matter in 2019. Accordingly, although the feedback on this matter is noted, such feedback should be directed towards the Department for Transport and the CAA. It should be noted that non-transponder equipped aircraft are not precluded from entering a TMZ. There are a number of Letters of Agreement in place at DSA with local GA enabling access to glider boxes and corridors upon request, furthermore, pilots may request access ahead of departure or indeed once airborne, despite the lack of transponder. It is then down to the discretion of the controller to determine whether access should be granted. DSA ATC has an excellent track record of facilitating access through the airspace for which it is the custodian and there is no intention to change this.

2.17. Displacement of Traffic

2.17.1. Given the:

- Challenges faced by the Sponsor and the Stakeholders in understanding the usage of this airspace;
- Indications from various aviation stakeholders that it is used very infrequently;
- Altitude (base-level FL85) of this volume of airspace;
- Relatively small lateral dimensions of this volume of airspace;
- Proposed classification - Class E airspace (even with TMZ/RMZ) does not preclude access to either IFR or VFR aircraft; and
- Airspace Modernisation Strategy statement regarding the vertical extent of most GA flying (up to 6000ft).

The ACP Sponsor has determined that there is minimal displacement of traffic likely. As any displacement, were it to occur, would be above 7000ft, it does not have an impact in terms of aviation noise disturbance, furthermore, the fuel and emissions impact will be negligible.

2.18. Existing Doncaster Class D Airspace

2.18.1. The case for retaining the existing airspace (and its classification) at DSA was set out clearly during the PIR and can be found in **CL-5216-RPT-002** (PIR Options Report already held by the CAA). Furthermore, SARG found in the CAA Conclusions to the PIR document, dated 14 June 2017, that despite some options having been identified, that no changes should be implemented.

2.18.2. Without prejudice to its concerns (as above), DSA believe that this amended proposal will still enhance the safety environment through the continued accommodation of GA aircraft across the airspace system resulting in the minimisation of the 'choke' points that the soaring community are primarily concerned about. Safety is improved where communication is effective.

2.19. Airspace Design

2.19.1. The airspace design proposal, aimed at containing the proposed ROGAG SIDs, is in accordance with the SARG Policy Statement 'Controlled Airspace Containment Policy', dated

17 January 2014[9]. It states that, *'a SID provides a specified Instrument Flight Rules (IFR) departure procedure that should remain wholly within Controlled Airspace (CAS) and permits connectivity with the en-route Air Traffic Service (ATS) route system'.* It also states that, *'in exceptional circumstances, and subject to an acceptable proposal supported by a safety case, to justify why SIDs without CAS are deemed to be appropriate, the establishment of SIDs outside CAS is now being considered by the CAA on a case by case basis'*. DSA do not believe that such a Safety Case can be made for at least the nominal track of the procedures to be contained and for this reason propose that the SIDs be contained to meet the Policy Statement. The ANSPs Safety Assessment (**Document 63**) acknowledges that the ROGAG SIDs are not wholly contained as that would require even more CAS, however, the risk, once mitigated, has been reduced to 'Acceptable'.

2.19.2. The airspace proposal is a volume of airspace that is of the minimum practicable size necessary '*for the effective protection of the ATC operation as defined by an ATS provider and to support a safe service, subject to any identified overriding environmental requirements and the need to avoid over complication of airspace structures'.*

[9] There has been no amendment to CAP778 relating to this Policy Statement to provide the greater detail that was anticipated.

3. Justification for the Change and Analysis of Change Options

3.1. The trigger for the proposal to implement these new procedures is the removal of the GAM VOR without which the existing departure procedures cannot be maintained. The VOR removal does however provide an opportunity to modernise the ATM arrangements.

3.2. As described in Part B of the Stakeholder Consultation document, realistically there were only two available options: Replicate or Redesign. **Doing Nothing** is not an option because the navigational aid that the current procedures rely upon is being withdrawn by NATS Services Ltd. As to the two options:

- **Replicate** – this option was considered the most viable as the entry and exit points to the existing route network will remain extant and the controlled airspace configuration to the west was designed around the procedures that exist today; or

- **Redesign** – given the existing controlled airspace configuration to the west and the airspace activities to be considered to the east, there was very limited scope for designing procedures radically differently from how they are today. It was considered that the opportunity to deliver significant environmental or operational benefits from the complete redesign of the procedures was minimal without total redesign of the associated airspace.

3.3. It was evident and evidenced in the various diagrams depicted in the Stakeholder Consultation Document, that aircraft currently do not follow the conventional SIDs or PDRs exactly as they were designed. Whilst there are differences in how the procedures have been interpreted from that which was intended, there is however a consistency to the way aircraft have flown them.

3.4. Full replication of the existing departures was proven to be not entirely possible due to a variety of factors, including design incompatibility with the PDRs which did not align with PANS-OPS criteria. A balance was sought between that which was previously designed versus that which is currently flown. Slight adjustments were identified that could be made to allow for a balanced solution aimed at affecting fewer people on the ground whilst, where possible, improving the operational aspects for aircraft operators and ATC. The resulting proposals are a combination of replication and redesign.

3.5. **Document 5** in the ACP bundle is the Focus Group Presentation used at the Options Development stage of the process. This brief set out the various options available to the designers in the development of the SID proposals. The views of those present at these Focus Groups can be found in **Documents 8, 9 and 10**.

3.6. UPTON SIDs

3.6.1. **Document 15** is the Stakeholder Consultation Technical Annex associated with the **UPTON 2A** (designed to replace UPTON 1A), the westerly departure off Runway 20. There is little change with the proposal, in design terms, until the turn south of the community of Tickhill, after which the SID turn has improved, i.e. less steep, and avoidance of communities en-route to UPTON are considered. The latter portion of the proposed UPTON 2A SID

procedure replicates, as closely as practicable, what is currently flown rather than what was previously designed. The increased accuracy of navigation performance in RNAV SID (versus conventional) should result in a narrowed swathe of traffic thereby impacting fewer communities. The current departure together with two solutions involving bank angles of 20 degrees and 25 degrees were presented to the Focus Groups together with Noise Track Keeping (NTK) data and the potentially affected communities. The Focus Group Notes **(Documents 8, 9 and 10)** demonstrate that provided the procedure remained contained in CAS, the Stakeholders were in favour of moving the track slightly further west over to between the 20-degree and 25-degree bank angle.

3.6.2. **Document 16** is the Stakeholder Consultation Technical Annex associated with the **UPTON 2B** (designed to replace UPTON 1B), the westerly departure off Runway 20. The existing UPTON 1B impacts both Bawtry and Scrooby and an opportunity was seen to re-design those elements of the SID that impact these communities. As a result, the UPTON 2B is mostly a replication with changes to the initial segment made in an attempt to reduce the impact on those communities previously impacted. At the Focus Groups an option was presented with a slight change to the bank angle of 25 degrees at the northern (left-turn) section of the departure to improve the turn consistency towards UPTON. The Focus Group Notes **(Documents 8, 9 and 10)** demonstrate that the Stakeholders accepted that this change should be proposed. UPTON 2B was retained as it provided a contingency operation for the occasional eventuality that there is gliding activity impacting the use of UPTON 2A. Despite the additional track mileage for CAT, the retention of this concession facilitates the use of the airspace for glider operations.

3.6.3. **Document 17** is the Stakeholder Consultation Technical Annex associated with the **UPTON 2C** (designed to replace UPTON 1C), the westerly departure off Runway 02. At the Focus Groups the NTK data clearly showed that aircraft were not currently following the published track of the current SID. Aircraft were routinely following a track that cut inside the turn resulting in overflight of built up areas. DSA expressed their intention to replicate the published procedure to concentrate traffic on the published nominal track and in so doing lessen the environmental impact. The Focus Group Notes **(Documents 8, 9 and 10)** demonstrate that the Stakeholders accepted this proposed solution.

3.7. ROGAG SIDs

3.7.1. **Document 18** is the Stakeholder Consultation Technical Annex associated with the ROGAG 1C (designed to replace ROGAG PDR), the easterly departure off Runway 02. Replication of how the ROGAG 02 had been interpreted was not possible in line with design criteria and obstacle limitation requirements. Four potential solutions were offered for discussion at the Focus Groups:

- Replication of the intended PDR using PANS-OPS criteria, this would have resulted in several communities (namely Wroot, Westwoodside and Haxey) being overflown that were not currently being overflown;

- Use of a design brief that avoided Haxey; but it was not ideal and resulted in a nominal flightpath close to Wroot and not sufficiently far enough away from Westwoodside;

- Use a Course-to-Fix leg with 2 options (20 degrees or 25 degrees) in a bid to try and replicate the NTK tracks but again neither was ideal as these impacted both Wroot and Westwoodside;

- Finally, develop a hybrid design of the second and third solutions in an attempt to avoid as many built up areas as possible. The hybrid resulted in overflight of a portion of an SSSI (area of Significant Scientific Interest) area although it was captured within the existing Noise Preferential Route limitations. The communities of Wroot, Blaxton, Finningley, Westwoodside, Haxey and Gringley-on-the-Hill would all have limited impact from the implementation of this option.

3.7.2. The Focus Group Notes **(Documents 8, 9 and 10)** demonstrate that the Stakeholders accepted the 'Hybrid' proposal was the best solution for the ROGAG 1C.

3.7.3. **Document 19** is the Stakeholder Consultation Technical Annex associated with the ROGAG 1A (designed to replace ROGAG PDR), the easterly departure off Runway 20. Two solutions were provided at the Focus Groups based on the initial departure flown followed by 20-degree and 25-degree bank angles following the existing NTK tracks. The actual PDR was not plotted as there is no graphical representation of what the route should be. The Focus Group Notes **(Documents 8, 9 and 10)** demonstrate that either of the proposed solutions or any route bracketed between the two angles presented with the inclusion of additional track miles for climb (if possible) would be acceptable. The extra track miles were requested by airline and ATM stakeholders for the purposes of airspace containment.

3.7.4. The 'threat' posed to the continued safety of operation resulting from the retention of the current airspace structure (i.e. the do-nothing scenario) is largely covered in the Stakeholder Consultation Document and is further amplified in **CL-5216-RPT-002** (PIR Options Report already held by the CAA). The containment of SIDs in accordance with CAA Policy[10] is considered appropriate and in keeping with the concerns raised by the aviation stakeholders as highlighted in paragraph 3.7.3 above.

3.7.5. Moreover, there are operational safety and efficiency benefits of increasing the volume of CAS. Both controller and cockpit workload is increased by having procedures that leave one form of controlled airspace to venture into uncontrolled airspace before re-entering controlled airspace. The human factors associated with change of ATS over a short distance must not be downplayed. Conversely, the smooth uninterrupted vertical and lateral profile afforded to the aircraft contained within controlled airspace is far more efficient. For this reason, the additional airspace for containment of the ROGAG SIDs is considered justified.

3.8. Amendments to the IFPs Post-Consultation

3.8.1. The IFPs designed for DSA ahead of the 2017 Stakeholder Consultation had to be amended to meet regulatory standards and to accommodate a number of minor flyability issues identified in the simulated validation exercise. No comment on this was made in the Post-Consultation Report to stakeholders as the requirements for change had not yet become fully apparent.

[10] SARG Policy Statement, 'Controlled Airspace Containment Policy', dated 17 January 2014.

3.8.2. Having received the revised IFP designs for the SIDs, the CAA requested a report detailing the differences between that which was consulted upon and that which had been submitted for approval. The report was to consider the rationale for change together with an assessment of the potential impact.

3.8.3. Accordingly, a 'Gap Analysis' was conducted and the rationale for changes together with the potential impacts were presented within an Impact Assessment report (**Document 62**).

4. Supporting Infrastructure/Resources

4.1. Although there are no changes required to the airspace configuration which supports the conversion of the existing SID procedures to RNAV SID procedures, the previous sections highlight the proposed changes to the airspace necessary to support the conversion of the PDRs to the east to RNAV SID procedures.

4.2. There are no changes required to the ATM infrastructure and resources at DSA as a consequence of this ACP. However, a minor change is required to the en-route ATM network, as detailed in paragraph 2.14. This will require no changes to the ATM resources at NATS PC.

4.3. ATM interfaces with NATS PC at Prestwick are well established and are subject to regular review by both Units. The proposed change to the en-route network has been agreed with NATS PC.

4.4. ATC staffing arrangements will remain unchanged from those that exist today.

4.5. Staff training will be required to assimilate the change in nomenclature, revised route alignments and application of RNAV principles. More importantly, staff training for both Prestwick Centre and Doncaster Approach ATCOs will be required in the application of Class E airspace rules with the added requirements of both the TMZ and the RMZ. This training will include Computer Based Training (CBT).

4.6. The SID procedures are suitable for navigation by means of GNSS. GNSS coverage and continuity is adequate to support the procedures.

4.7. Contingency arrangements in the event of loss of RNAV-1 navigation capability by an aircraft whilst within the DSA CTR/CTA include the provision of navigation assistance by means of surveillance systems. This is acceptable and would be within ATC workload.

4.8. The proposed SID procedures are contained within airspace where the Communications, Navigation and Surveillance (CNS) infrastructure is well proven and appropriate contingency procedures already exist.

4.9. No changes are required to the extant SSR Code assignments.

4.10. Existing separation standards are adequate to support the replacement of the existing PDRs with RNAV-1 SID procedures. The establishment of Class E TMZ/RMZ controlled airspace to the south-east will enable the appropriate “inside controlled airspace” separation minima to be used against other airspace activity and will reduce controller workload in comparison to the current Class G “outside controlled airspace” operating environment.

4.11. NERL and ATCSL have agreed that ROGAG SIDs and ODDs will continue as ‘freeflow’ and UPTON SIDs will continue as Take-Off Subject Release (TOSR).

4.12. ATC Procedures will reflect that Doncaster Approach will retain control of the ROGAG SID (and any ODD traffic) until clear of Class E (TMZ/RMZ) airspace. Doncaster will transfer aircraft clear of any R313 activity.

4.13. Should Doncaster Approach have a degradation of radar capability (PRI or SSR only), ROGAG SID and ODD traffic will be subject to TOSR and offered to PC East to control through the Class E TMZ/RMZ airspace.

4.14. Appropriate Class E and TMZ/RMZ phraseology and associated strip marking will need to be introduced by both ANSPs.

5. Operational Impact

5.1. Overview

5.1.1. This Section outlines the impact on airspace users under the bullet points detailed in CAP725 Appendix A paragraph 7.

5.2. Impact on IFR General Air Traffic or Operational Air Traffic or VFR traffic through the area

5.2.1. There is no impact on the operation of other IFR or VFR flights through the existing DSA CTR/CTA as a consequence of the replacement of the conventional SIDs and PDRs with RNAV SID procedures or the introduction of RNAV IAPs.

5.2.2. IFR and VFR transit flights in Class D controlled airspace are subject to ATC clearance which enables potential conflict between these flights and any DSA aircraft to be managed and resolved in accordance with standard ATC practice.

5.2.3. The introduction of an additional segment of CTA is no different in the sense that although IFR traffic will require a clearance to enter the Class E (TMZ/RMZ), they would be highly unlikely to be denied access. Although it will be managed in a subtly different way for VFR traffic, i.e. no clearance is required for VFR aircraft to enter the Class E (TMZ/RMZ) CTA. Despite the views of some GA organisations, the dimensions of this additional segment are not excessive and are now considered to be proportionate with the traffic profiles. As the base is set at FL85, it is considered to have little impact on traffic transiting the area. Note that many of the other local airspace users engaged with in the Supplementary Consultation acknowledged that it would affect only a very small proportion of airspace users. Furthermore, the UK Airspace Modernisation Strategy itself, Reference [9], supports this view in paragraph 1.3:

'The vast majority of commercial flights operate in controlled airspace. General Aviation and aerial sports operate largely in uncontrolled airspace below 6000 feet, alongside a few commercial flights.'

5.2.4. The lowering of L603/L60 above R313 is also perceived to have little impact on transit traffic as when R313 is active (up to 9,500ft amsl). The MoD were engaged in focus group activities (as evidenced) as DSA were conscious of the need for military aircraft to transit from the Lincolnshire AIAA into the Vale of York AIAA and onwards to the Danger Area complex over the North Sea. The MoD have agreed a draft Letter of Agreement (LoA – **Document 40**) and they did not object to the proposal either at the Focus Group level or in either consultation.

5.3. Impact on VFR operations

5.3.1. There is no impact on the operation of VFR flights (whether arriving, departing, transiting or manoeuvring) through the existing DSA CTR/CTA as a consequence of the replacement of the conventional SIDs and PDRs with RNAV SID procedures or the introduction of RNAV IAPs.

5.3.2. The additional Class E (TMZ/RMZ) CTA will be managed in a subtly different way for VFR traffic as no clearance is required for VFR aircraft to enter the Class E (TMZ/RMZ) CTA. The

addition of the RMZ and TMZ rules enable ATCOs to mitigate potential conflicts between VFR aircraft and IFR flights as an appreciation of aircraft intentions allows for forward planning thus minimising the disruption for all concerned.

5.3.3. The existing ATM resources are adequate to manage the very small amount of additional CTA without detriment to the service within the existing Class D airspace or to services routinely provided outside controlled airspace.

5.4. Consequential impact on procedures and capacity

5.4.1. The capacity of the airspace, ATC and the Airport are not affected by the change from PDRs to SID procedures. The SID procedures are suitable to handle the approved forecast traffic growth at DSA.

5.4.2. The SID procedures are compatible with NATS requirements for access to the overlying route network.

5.4.3. Integration of departing traffic with other arriving, departing or overflying flights, including those carrying out notified IFPs, will be carried out in accordance with standard ATC practice. No significant changes are anticipated.

5.5. Impact on aerodromes and specific activities within or adjacent to the proposed routes

5.5.1. The Sandtoft ATZ is embedded within the DSA CTR for which a Letter of Agreement (LoA) exists to ensure a fully integrated operation within the normal Class D airspace rules. The replacement of PDRs with SIDs does not impact on these arrangements.

5.5.2. There are a number of aerodromes in close proximity to the DSA CTR/CTA such as Retford (Gamston), Sherburn-in-Elmet, Sandtoft, Netherthorpe and Darlton. Some operate training flights within or through the CTR/CTA subject to ATC clearance; these flights are integrated into the overall ATM operation in accordance with normal ATC practice.

5.5.3. Sandtoft, Retford (Gamston), Darlton, Netherthorpe and Sherburn-in-Elmet were all engaged with during the development of these proposals.

5.5.4. The Airport has LoAs with neighbouring GA airfields/units and these continue to result in the provision of access to both IFR and VFR aircraft as required in a co-ordinated fashion. These LoAs were reviewed with the airspace change in mind and were found to not be impacted. Local and neighbouring airspace users are engaged regularly for professional discussion and DSA has convened a Local Airspace Infringement Team (LAIT). Members of this team consist of local and neighbouring aviation schools, clubs (fixed wing and glider) and pilots including neighbouring airports and a CAA Airspace Regulator.

5.5.5. Although not typically involving airfields immediately adjacent to DSA, some of the soaring community advised that the airspace volume, identified as CTA-13, is used for wave flying and high-altitude cross-country transits. Their view was that the existing North-South corridor (the Upton Corridor) can become congested as it is not of ideal dimensions. The alternative is to pass along a narrow corridor along the Trent Valley (between the DSA Class

D CTA and the Lincolnshire 'MATZ cluster'). None of these organisations were able to evidence their usage although the Wolds and the Yorkshire Gliding Clubs suggested it could affect anything from 1-2 up to 20 or 30 per day on a competition day.[11]

5.5.6. The existing usage of the glider boxes and corridors is tracked by DSA and the figures presented below, in **Table 4**, suggest that they are not as well utilised as perhaps some suggest they are. This may be due to a number of factors, although it is likely that this is mainly due to the weather conditions not being conducive in these specific areas when the soaring community wishes to use them. DSA and their resident ANSP remain open to discussions on how these volumes of airspace may be amended or utilised but fundamentally, they remain committed to facilitating open access for all airspace users.

Period	Total	CAS Cross	Non Cross	Askern	Burn	Camphill	Darlton	Goole	Upton	Worksop	Denial of access
May 2019	1639	968	665	0	4	0	0	0	5	1	0
2019 Year to date	6139	3461	2672	0	6	5	0	0	5	1	0
2018	16584	8723	7861	0	4	2	3	0	8	3	0

Table 4: DSA Airspace Access Report - May 2019

5.5.7. The requirement to carry a transponder in the Class E (TMZ/RMZ) is not designed to prevent the glider or microlight community from accessing the airspace and it is mitigated by the opportunity to call ahead of time to gain non-transponding access.

5.6. Any flight planning restrictions or route requirements

5.6.1. There are no other restrictions or route requirements for the use of the SIDs by aircraft approved for RNAV-1 operations in Terminal Airspace. The small numbers of aircraft incapable of meeting the demands of the RNAV-1 SIDs will be issued an ODD as detailed in para 2.8.

5.6.2. It is acknowledged that the speed restrictions associated with some of the procedures are below the speeds that some operators can achieve (for example there is an operator likely to commence using an aircraft type, not currently at the Airport, for which it has indicated that a speed restriction of 185kts on the SIDs poses an operational challenge). Should this operation materialise, this operator is catered for by the availability of the ODDs and the volume of traffic that cannot achieve the requirements is not significant.

[11] Further research indicates the Wolds Gliding Club is not active all year round as it only operates 7 days per week during the summer, furthermore, their website indicates there typically are 2-3 competitions per year.

6. Economic Impact

6.1. CAP725 suggests that an economic appraisal and valuation should be made of the economic impact of the proposal. However, it acknowledges the difficulties in doing so.

6.2. There are no economic benefits accruing to DSA as a consequence of the replacement of the conventional SIDs and PDRs with RNAV-1 SID procedures, nor with the introduction of RNAV IAPs. These IFPs do not increase airspace or runway or Airport capacity nor do they enable any reduction in the provision of infrastructure or resources.

6.3. Minor economic benefits may accrue to aircraft operators through the application of more regularised flight procedures and the more efficient and continuous climb profile of the ROGAG SIDs. The more efficient climb will help to negate the slight increase in track miles associated with the proposed designs which prioritise the reduction in the adverse effects of aviation noise over fuel and emissions below 7,000ft.

6.4. Conversely, there may be slight economic detriment arising from the application of less than optimum speed control requirements for jet aircraft to the first few miles of each SID procedure. The speed limits are applied to ensure track adherence for environmental (noise) and operational reasons and are compatible with aircraft operating parameters. Any perceived detriment is considered to be unquantifiable.

6.5. It is not possible to develop any viable cost-benefit analysis of the proposed IFPs.

7. Safety Management

7.1. Safety Management is an intrinsic element of any airspace change. DSA has an obligation to provide ATS and IFPs which are safe.

7.2. DSA operates a Safety Management System (SMS) in accordance with the provisions of CAP670[12] and Single European Sky Common Requirements.

7.3. DSA has used sound safety management principles throughout the development of the IFPs detailed in this ACP.

7.4. DSA has taken due regard of that which was learned from the Flyability Assessments conducted in a B737-800 simulator in the application of climb gradients and speed limits to the procedure designs and has welcomed the support of Virtual Aviation in providing simulation facilities to meet the procedure validation requirements of CAP785. **Document 11** in the ACP bundle is the Flyability Assessment Plan. A Flight Validation Plan will be written and submitted ready for the simulations expected to take place in both a B737-800 and an A320 simulator in late-June 2018.

7.5. A HAZID Analysis has been carried out on the proposed SID procedures and will be documented within the ATCSL SMS. Local Operators and the ANSP (ATCSL) were involved in the HAZID so that the safety implications could be assessed alongside each other. The results of the HAZID will be made available to SARG ATS regulation department and to SARG IFP Regulation Staff with the CAP785 submission. **Documents 3, 4 and 7** contain the HAZID Brief, Presentation and the HAZID Report.

7.6. A further HAZID was conducted in relation to the airspace containment and the introduction of Class E airspace. The brief and the report associated with these are to be found within **Documents 70 and 71**. **Document 63** contains the revised ATCSL Safety Assessment.

[12] CAP670: ATS Safety Requirements

8. Airspace and Infrastructure Requirements

8.1. A key element of any change proposal is the need to demonstrate that the proposed airspace change complies with the Airspace and Infrastructure Requirements. The Airspace and Infrastructure Requirements are derived from SES Regulations, ICAO SARPs and ECAC/Eurocontrol requirements, and any additional requirements to satisfy UK Policy. These are met as follows:

- The proposed airspace structures are of sufficient dimensions with regard to expected aircraft navigation performance and manoeuvrability to contain horizontal and vertical flight activity in both radar and non-radar environments[13];
- As the airspace structure is required for radar control purposes, the dimensions should be such that radar control manoeuvres can be contained within the structure, allowing a safety buffer. This safety buffer should be in accordance with agreed parameters as set down in SARG Policy Statement 'Safety Buffer Policy for Airspace Design Purposes Segregated Airspace' unless covered by 'Policy Dispensations'. This is covered by the LoA referred to at paragraph 2.14.8;
- The Air Traffic Management (ATM) system remains adequate to ensure that prescribed separation can be maintained between aircraft within the airspace structure and safe management of interfaces with other airspace structures;
- Existing Air Traffic Control (ATC) procedures are sufficient to ensure required separation between traffic inside the new airspace structures and traffic within R313 and the Class G airspace;
- Within the constraints of safety and efficiency, the airspace classification (Class E TMZ/RMZ) will permit access to as many classes of user as practicable;
- Assurance against unauthorised incursions is assured, as far as practicable, through the promulgation of an AIC, through the AIRAC cycle, through annotation of the airspace structure on the relevant VFR chart and through the DSA Local Airspace Infringement Team (LAIT) highlighted in paragraph 5.5.4;
- Pilots shall be notified of any failure of navigational facilities and of any suitable alternative facilities available;
- The notification of the implementation of the new airspace structures will be adequate to allow interested parties sufficient time to comply with user requirements. This will be done through a single AIRAC cycle;
- There is sufficient R/T coverage to support the ATM system within the totality of proposed controlled airspace;

[13] Accepting that the protection areas are not fully contained in some cases but that a Safety Assessment has been conducted.

- If the new structure lies close to another airspace structure or overlaps an associated airspace structure, the need for operating agreements shall be considered; and

- Should there be any other aviation activity (low flying, gliding, parachuting, microlight site, etc.) in the vicinity of the new airspace structure and no suitable operating agreements or ATC Procedures can be devised, the Change Sponsor shall act to resolve any conflicting interests.

8.2. Terminal Airspace (CTR/CTA)

8.2.1. Airspace changes in respect of Terminal Airspace (CTR/CTA) structures are subject to additional requirements and these are met as specified in the paragraphs below:

- The airspace structure is of sufficient dimensions to contain the procedures, holding patterns and most of their associated protected areas;

- There is effective integration of departure and arrival routes associated with the airspace structure and linking to designated runways and published IAPs;

- The routes between the proposed terminal airspace and existing en-route airspace structure are linked;

- The airspace structure has been designed to ensure that adequate and appropriate terrain clearance can be readily applied within and adjacent to the proposed airspace;

- Suitable arrangements for the control of all classes of aircraft (including transits) operating within or adjacent to the airspace in question, in all meteorological conditions and under all flight rules, are already in place;

- Sufficient VRPs are already established within or adjacent to the DSA CTR/CTAs to facilitate the effective integration of VFR arrivals, departures and transits of the airspace with IFR traffic;

- There remains suitable availability of radar control facilities;

- DSA (through their ANSP) shall, upon implementation of this airspace change, continue to gather and maintain statistics on the number of aircraft transiting their airspace. DSA shall maintain records on the numbers of aircraft refused permission to transit their airspace, and the reasons why; and

- Continuous Descent Approach (CDA) profiles have not been incorporated into the RNAV IAP designs from the holding facility.

8.3. Off-Route Airspace Structures

8.3.1. Airspace changes in respect of Off-Route Airspace Structures are subject to additional requirements and these are met as specified in the paragraphs below:

- As the new structure lies close to another airspace structure (R313), a LoA setting out the operating agreements has been drafted; and

- As there is significant aviation activity (military low flying, gliding, parachuting, microlight site etc.) in the vicinity of the new airspace structure there are several LoAs already in place containing suitable operating agreements and ATC Procedures. DSA shall continue to act to resolve any conflicting interests through the Local Airspace Infringement Team (LAIT).

9. Supporting Maps, Charts and Diagrams

9.1. Formal Proposals must include diagrams and descriptions of the airspace proposed, clearly showing the dimensions and WGS84 co-ordinates of the proposed changes. The division of complex airspace structures must be clearly annotated, in accordance with charting convention as far as possible. An explanation for each proposed structure must be given to substantiate the need.

9.2. An overlay of the proposed airspace changes has been provided in order to illustrate the difference between current and proposed structures on a 1:500 000 series VFR chart. This chart can be viewed at Appendix C9.

9.3. **Table 5** below details the UK AIP charts and paragraphs that are affected by the proposed changes.

Chart Title	Chart No.	Remarks
Doncaster Sheffield Aerodrome – Textual Data	AD 2-EGCN-1	2.8 VOR checkpoints 2.17 Air Traffic Services Airspace 2.19 Radio Navigation and Landing Aids 2.21 Noise Abatement Procedures para 3 (Departures) 2.22 Flight Procedures para 3 (Non-Radar Approach Procedures), para 4 (Holding), para 5 (Radio Communications Failure Procedures), para 6 (Procedures for Outbound Aircraft) and para 9 (VRPs) 2.24 Charts Related to an Aerodrome
Control Zone and Control Area Chart - ICAO	AD 2-EGCN-4-1	Additional CTA
ATC Surveillance Minimum Altitude Chart – ICAO	AD 2-EGCN-5-1	Remove GAM VOR

Chart Title	Chart No.	Remarks
Upton SIDs Chart - ICAO	AD 2-EGCN-6-1	New Chart for RNAV SIDs
Additional Chart Required – ROGAG SIDs Chart - ICAO	N/A	New Chart for RNAV SIDs
Additional Charts Required – RNAV IAPs	N/A	New Charts for RNAV IAPs

Table 5: AIP Amendments

9.4. The VFR charts will need amending to reflect the removal of the GAM VOR. As the additional segment of CTA is above 5,000ft it will not need annotating on the 1:250,000 chart but it will need annotating on the 1:500,000 chart along with changes to the base of L603/L60. DSA will ensure these changes are made subject to these changes being approved.

9.5. Draft IFP Charts and Data Coding Tables are included at **Appendix C** and include WGS84 co-ordinate data. These, together with the additional data required to satisfy the CAP785 IFP approval requirements will be submitted separately to the IFP Regulation Section of SARG. Waypoint co-ordinates in both WGS-84 and OSGB-36 format are given in **Appendix C**.

9.6. The Stakeholder Consultation Document carries a selection of charts and diagrams depicting the proposed SIDs and the NPRs against both Google Earth and Ordnance Survey backgrounds. The Technical Annexes to Part B of the Stakeholder Consultation Document also carry a selection of charts and diagrams depicting the route of the SIDs against Google Earth backgrounds. In addition, track plot diagrams were included showing the historic actual flight paths of departing aircraft (derived from the Airport NTK equipment) against the proposed SID routes.

9.7. These graphical illustrations enabled consultees to assess how they might be affected by the alignment of the proposed SID procedures against how they had been affected by the use of the existing SIDs and PDRs in the past.

9.8. Updates to some of these depictions can be found within the Impact Assessment (**Document 62**).

10. Designation of SIDs and Waypoint Naming

10.1. CAA Policy for the designation of SIDs (in accordance with ICAO Annex 11, Appendix 3) is detailed in CAP778 and CAA Policy Statement of 18 February 2014[14].

10.2. It is proposed that the Route Designators, UPTON and ROGAG, be allocated to DSA RNAV SID procedures.

10.3. Waypoint naming is in accordance with the CAA Policy detailed in CAP778 and CAA Policy Statement of October 2008[15].

10.4. SID termination waypoints and existing waypoints on ATS routes are given the ATS Route Significant Point.

10.5. Waypoints that are likely to be spoken in RTF dialogue or are at the intersection of two or more SID procedures are allocated a 5-Letter Name Code (5LNC). Accordingly, a single waypoint associated with both ROGAG procedures has been allocated the following name in the ICARD system:

- CNS07 shall be LEDLA.

10.6. All other waypoints are given an alpha-numeric designator comprising CN, then a letter denoting the appropriate quadrant from the Airport (N, E, S, or W) and a number denoting the approximate distance from the departure runway.

10.7. The IFs for the RNAV IAPs have been assigned 5LNCs as per the CAA Policy. These names have been allocated in the ICARD system as follows:

- CN20I shall be IBIPA; and
- CN02I shall be NUVRU.

[14] SARG Policy Statement 18 February 2014: Designation of Standard Instrument Departures and Standard Approach Procedures in the UK Flight Information Region; Paragraph 1.
[15] DAP Policy Statement 30 October 2008: Use and allocation of RNAV Waypoints

11. Inputs to the Environmental Assessment

11.1. Overview

11.1.1. CAP725[16] details the required inputs to the environmental assessment. This Section outlines the way DSA has approached the environmental assessment of the proposed SID procedures, including the consideration of anticipated dispersion about the nominal centre-line of each route.

11.1.2. Details of the specific environmental considerations applicable to the generality of the development of the proposed SID procedures, as well as their application to each specific SID were documented in the Stakeholder Consultation Document and supporting Technical Annexes.

11.1.3. This Section of the ACP provides an additional rationale of the headline aspects of environmental assessment detailed in CAP725. Additional details of the specific environmental considerations for each individual route are given in Sections 14 to 19 of this Document.

11.2. Traffic Forecasts

11.2.1. Traffic growth forecasts were included in the environmental assessment of the impacts of the proposals and were made clear in the Stakeholder Consultation document. The new DSA Master Plan predicts growth to sustain the handling of between 4.7 and 7.2 million passengers and between 70,000 and 176,500 tonnes of cargo annually by 2037.

11.2.2. Forecast traffic growth is not affected by either the replacement of PDRs or the conventional SIDs with RNAV SIDs.

11.2.3. In each SID description detailed in the technical Annexes to the Stakeholder Consultation Document, we included an estimated utilisation of the routes based on Summer 2016 data.

11.3. Airport Noise Contours

11.3.1. CAP725[17] requires that ACP Sponsors must produce $L_{Aeq,\ 16h}$ and $L_{Aeq,\ 8h}$ noise exposure contours for any changes to departure routes below 4000ft.

11.3.2. DSA provided noise contour charts depicting the pre-RNAV arrangements (2017), the immediate post-implementation "with RNAV" arrangements and the 5-year forward (2023) situation.

11.3.3. The Noise Contour Charts are depicted and described in the Stakeholder Consultation Document and can be viewed in full in the Environmental Assessment Report (**Document 31**).

[16] CAP725 Appendix B Section 3.
[17] CAP725 Appendix B Section 4.

11.4. SEL Footprints

11.4.1. CAP725[18] requires SEL footprints to be calculated when any changes to the distribution of flight paths at night below 7000ft within 25km of a runway are proposed.

11.4.2. DSA commissioned the production of SEL charts for the Boeing 737-800 for the proposed departure routes. The B737-800 is the most common and the noisiest type at night in the forecasts for both 2017 and 2023.

11.4.3. The SEL Charts were explained in the Part A of Stakeholder Consultation Document[19]. The SEL chart analysis and depiction is given for each SID in the technical annexes to Part B of the Stakeholder Consultation Document and can be viewed in full in the Environmental Assessment Report (**Document 31**).

11.4.4. As with the L_{Aeq} contours, the SELs depicted the pre-RNAV arrangements (2017), the immediate post-implementation "with RNAV" arrangements and the 5-year forward (2023) situation.

11.5. Lateral Dispersion of Traffic

11.5.1. The expected lateral dispersion of the RNAV SIDs will be in keeping with RNAV-1 navigational tolerance. The lateral dispersion for the RNAV IAPs is not expected to change as the omission of the T-bars was intended to allow the design to replicate the pattern flown by aircraft being vectored to the ILS. This is described in Part C, Section 1.2 of the Stakeholder Consultation Document.

11.6. National Parks and Areas of Outstanding Natural Beauty

11.6.1. No National Parks or Areas of Outstanding Natural Beauty are impacted by the proposals.

11.7. Visual intrusion, Tranquillity and Biodiversity

11.7.1. Although difficult to measure, the potential visual intrusion and impact on tranquillity is recognised.

11.7.2. In terms of biodiversity, the Site of Specific Scientific Interest (SSSI) at Hatfield Moors was already overflown by the ROGAG 02 PDR, the ROGAG 1C goes slightly further north over this SSSI (a lowland peat bog). A response of 'No comment' from both the Environment Agency and Natural England was received to the Stakeholder Consultation.

11.8. Local air quality

11.8.1. Technical guidance material from the CAA does not require DSA to make an assessment of air quality as neither the airport nor the surrounding airspace lie within an Air Quality Management Area (AQMA).

[18] CAP725 Appendix B Section 4.
[19] Stakeholder Consultation Document, Part A, Section 3.5

11.8.2. This was detailed in the Stakeholder Consultation Document[20].

11.9. Climate change and emissions

11.9.1. CAP725 states[21] that the potential to maximise CO_2 efficiency is primarily above 7000ft where local impacts are not a priority. The UPTON SID procedures do not extend above 7000ft. The ROGAG SID procedures do extend to FL160 but the DfT's altitude-based priorities have been heeded in the designs resulting in slightly longer track distances up to 7000ft.

11.9.2. The DfT Air Navigation Guidance (ANG) (2017) states that *'in the airspace from the ground to below 4,000 feet the government's environmental priority is to limit and, where possible, reduce the total adverse effects on people.'* It goes on to state that in the airspace at or above 4000ft to below 7000ft *'the environmental priority should continue to be minimising the impact of aviation noise in a manner consistent with the government's overall policy on aviation noise, unless the CAA is satisfied that the evidence presented by the sponsor demonstrates this would disproportionately increase CO_2 emissions.'*

11.9.3. The proposal is to replace the PDRs and SIDs with RNAV SID procedures which are aligned to a large extent on comparable flight paths, and the proposals do not alter the numbers of aircraft accessing the route network. DSA were very conscious of the DfT guidance on noise below 7000ft and as a result the track distances of the SIDs are slightly longer than the corresponding existing departure routes (as flown, not necessarily as published). DSA considers that the negative impact of this ACP on emissions and climate change (highlighted in **Document 32**) is not 'disproportionate' to the proposed changes aimed at reducing the total adverse effects (noise) on communities close to the Airport.

11.10. Relief and Respite

11.10.1. Although no defined respite options were deemed to be practical, DSA has considered relief in accordance with the DfT ANG. The Stakeholder Consultation Document[22] covers the relief afforded to several communities associated with the proposed changes to the departure procedures. Note: The 2014 ANG was utilised as the 2017 ANG had not been released at consultation launch.

11.11. Altitude-Based Priorities

11.11.1. As the SIDs are contained largely below 7,000ft, DSA's priority, in the conceptual design phase of the proposed SIDs, was to minimise noise impact of aircraft and the number of people on the ground significantly affected by it. Again, this aligns with the DfT ANG (2014) and the Altitude-Based Priorities contained within it.

[20] DSA Stakeholder Consultation Document, Part A, Section 4.4.
[21] CAP725 (2016 edition) Appendix B paragraph B101.
[22] DSA Stakeholder Consultation Document, Part A, Section 4.2.

11.12. Continuous Descent Operations

11.12.1. Continuous Descent Operation were not factored in as transitions between the STAR and the IAP were not part of this ACP.

11.13. Subsequent Environmental Assessment

11.13.1. Following the minor amendments to the SIDs (detailed in the Impact Assessment, (**Document 62**)), the noise, fuel and emissions assessments were reviewed by the two environmental consultants. The changes were found to have no significant bearing on the results previously established for this ACP.

12. Noise Preferential Routings (NPRs)

12.1. Although there is no proposal to amend any other aspect of their Noise Abatement Procedures, DSA wish to amend the NPRs that were agreed with the Local Planning Authority, Doncaster Metropolitan Borough Council, under a Section 106 Agreement (see **Document 41**).

12.2. The proposal is clearly set out in Section 3 of Part A of the Stakeholder Consultation Document. The existing NPRs at DSA extend from the designated runway end, centred on the nominal track of the SID and either side by 1.5km and extending to an altitude of 3,000 feet based on the minimum procedure climb gradient.

12.3. Each SID has a defined NPR and since it is proposed that the SIDs change, the NPRs need to be adapted to follow the new designs. **Figures 9 and 10** (below and overleaf) provide an overview of the existing (yellow) and proposed (blue) NPRs providing a graphical indication of the changes. The proposed NPRs are slightly shorter owing to the increased climb gradient but will still extend to an altitude of 3,000 feet.

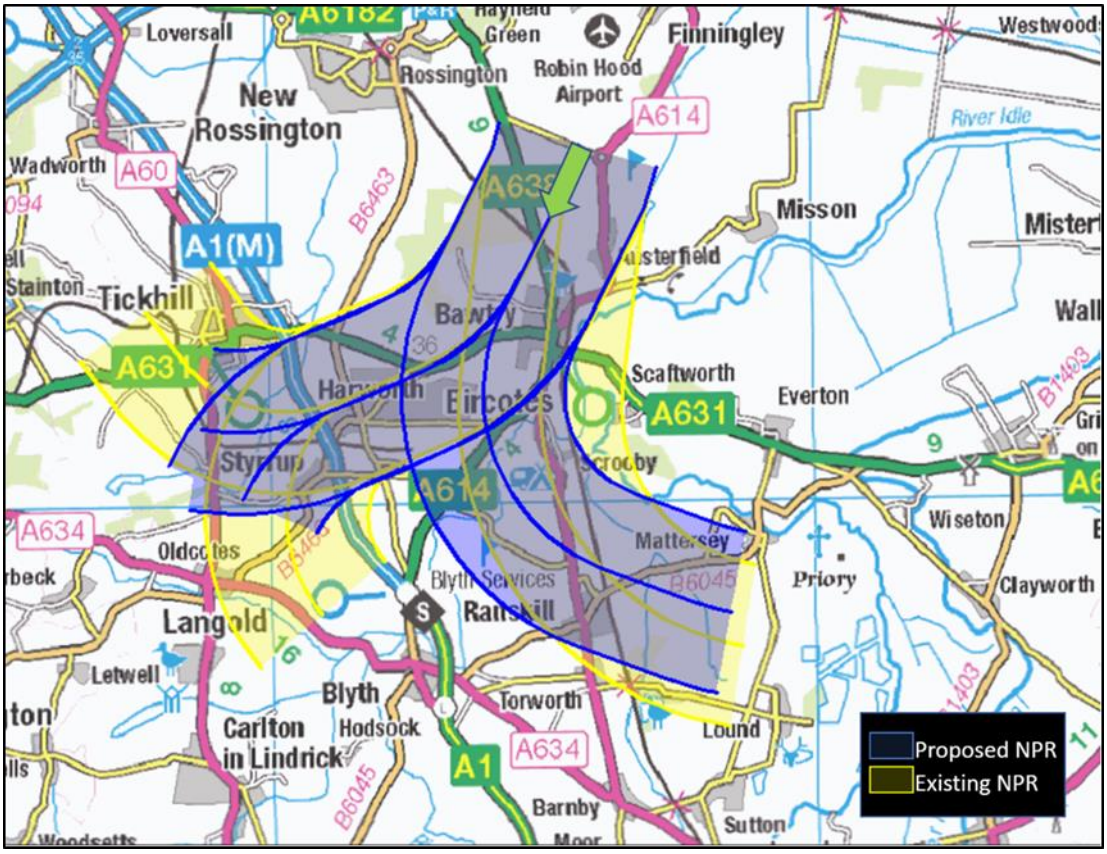


Figure 9: Runway 20 DSA Noise Preferential Routings

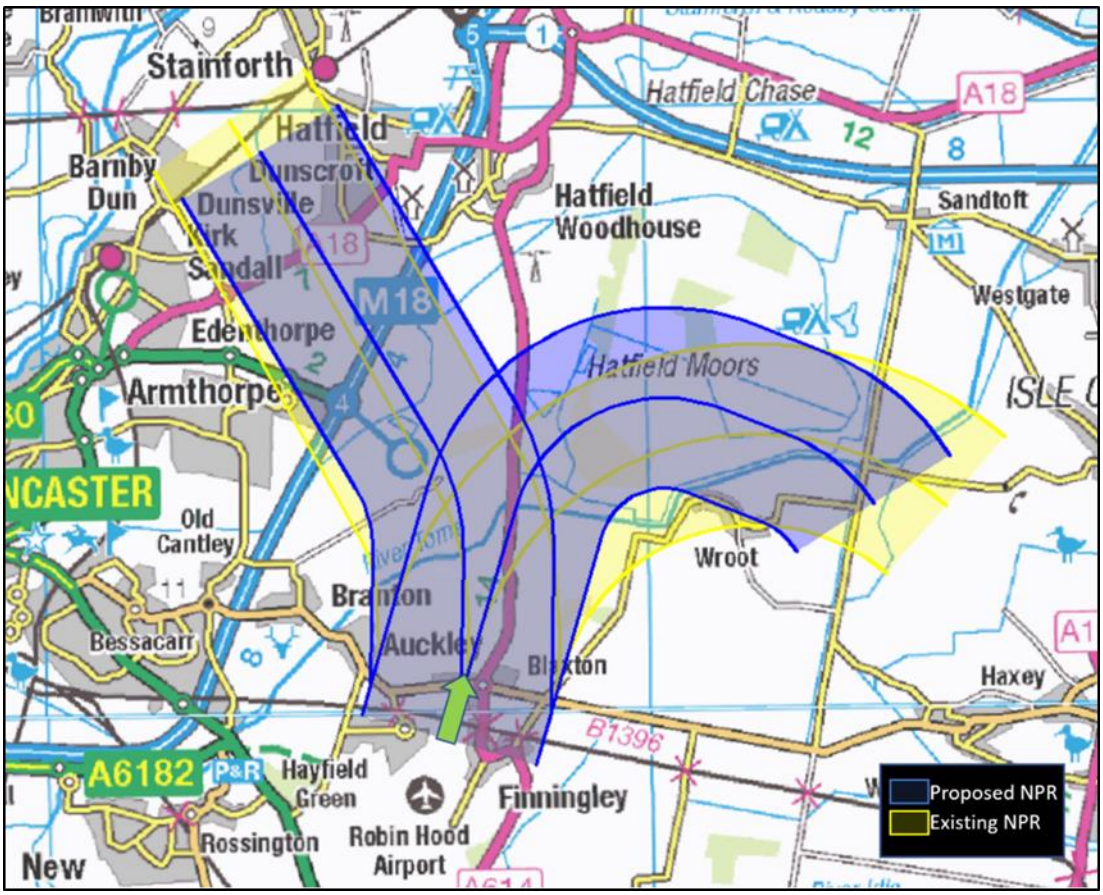


Figure 10: Runway 02 DSA Noise Preferential Routings

A. CAP725 Compliance Matrix

This Compliance Matrix is submitted to assist in the evaluation of the ACP document against the requirements specified in CAP725. It is modelled on the Compliance Matrix utilised by CAA SARG accompanying a Decision Letter on the implementation of a previous CAP725 ACP.

1.	Justification for the change and Options Analysis	Status
1.1	**Is the explanation of the proposed change clear and understood?**	**Yes**
	A full description of the proposed changes is provided in Part A in the Executive Summary. It provides an overview of the submission and the document is laid out to align with CAP725 requirements.	
1.2	**Are the reasons for the change stated and acceptable?**	**Yes**
	The GAM VOR is being withdrawn as stated in the Executive Summary and this is the driver for change.	
1.3	**Have all appropriate alternative options been considered, including the "do nothing" option?**	**Yes**
	See Section 3 of Part B and the Technical Annexes to the SC Document.	
1.4	**Is the justification for the selection of the proposed option sound and acceptable?**	**Yes**
	See Section 3 of Part B and the Technical Annexes to the SC Document. Focus Groups were held with a variety of Stakeholders to ensure that a wide array of considerations was factored into the proposed options.	

2.	Airspace description and operational arrangements	Status
2.1	**Is the type of proposed airspace clearly stated and understood?**	**Yes**
	See Section 2.12 of Part B.	

2.	Airspace description and operational arrangements	Status
2.2	**Are the hours of operation of the airspace and any seasonal variations stated and acceptable?**	**Yes**
	The proposal is for H24 operation of the airspace (no change in terms of hours of operation).	
2.3	**Is any interaction with adjacent domestic and international airspace structures stated and acceptable including an explanation of how connectivity is to be achieved? Has the agreement of adjacent States been secured in respect of High Seas airspace changes?**	**Yes**
	Any chance of interaction with R313 has been factored into the LoA between RAF Waddington and DSA. NATS has also accepted the proposed changes.	
2.4	**Is the supporting statistical evidence relevant and acceptable?**	**Yes**
	Traffic numbers per route were provided in the Technical Annexes that accompanied the SC Document. Supporting statistical information was provided in the environmental assessment report.	
2.5	**Is the analysis of the impact of the traffic mix on complexity and workload of operations complete and satisfactory?**	**Yes**
	No change to the traffic mix is proposed and the complexity or workload should be reduced for both ATC and pilot owing to airspace containment of the procedures.	
2.6	**Are any draft Letters of Agreement and/or Memoranda of Understanding included and, if so, do they contain the commitments to resolve ATS procedures (ATSSD) and airspace management requirements?**	**Yes**
	Yes, see the LoA between DSA and RAF Waddington.	
2.7	**Should there be any other aviation activity (low flying, gliding, parachuting, microlight site etc) in the vicinity of the new airspace structure and no suitable operating agreements or ATC Procedures can be devised, what action has the sponsor carried out to resolve any conflicting interests?**	**Yes**

2.	Airspace description and operational arrangements	Status
	See the LoA between DSA and RAF Waddington. Consideration is being made to the establishment of a 'Trent Corridor', similar to the existing 'Upton Corridor'.	
2.8	**Is the evidence that the Airspace Design is compliant with ICAO SARPs, Airspace Design & FUA regulations, and Eurocontrol Guidance satisfactory?**	**Yes**
	Designs have been completed by a UK accredited APD and designs will be submitted in accordance with CAP785.	
2.9	**Is the proposed airspace classification stated and justification for that classification acceptable?**	**Yes**
	See Section 2.12 of Part B.	
2.10	**Within the constraints of safety and efficiency, does the airspace classification permit access to as many classes of user as practicable?**	
	DSA does not deny access to the existing Class D airspace by VFR or IFR itinerant flights or from conducting training operations within the CTR/CTA and is committed to providing equitable access to the all airspace under its jurisdiction. The contracted ANSP is, and will continue to be, adequately resourced, in line with forecast growth, to ensure the airspace is not managed 'by exclusion'. DSA will not deny access to the proposed Class E (TMZ/RMZ) and provisions already exist for non-RT and non-transponding aircraft to access such airspace as per the CAA Policy Statement. DSA shall continue to work with the Local Airspace Infringement Team (LAIT) and local airspace users to facilitate efficient and open access to all users.	**Yes**
2.11	**Is there assurance, as far as practicable, against unauthorised incursions? (This is usually done through the classification and promulgation)**	
	Radar Surveillance is used to manage the airspace which is published in UK AIP and will be portrayed on UK VFR charting. DSA is proactive in this regard through the LAIT meeting held on a regular basis.	**Yes**

2.	Airspace description and operational arrangements	Status
2.12	**Is there a commitment to allow access to all airspace users seeking a transit through controlled airspace as per the classification, or in the event of such a request being denied, a service around the affected area?**	**Yes**
	See bullet 2.10 above.	
2.13	**Are appropriate arrangements for transiting aircraft in place in accordance with stated commitments?**	**Yes**
	See bullet 2.10 above.	
2.14	**Are any airspace user group's requirements not met?**	**Partial**
	Although the existing airspace arrangements are not the subject of this ACP, elements within the GA fraternity appear dissatisfied with both the existing and the proposed airspace arrangements. As previously explained, the ANSP does not deny access to the airspace to the GA community and is committed to continue providing flexible access. This is substantiated with evidence from NTK in the submission.	
2.15	**Is any delegation of ATS justified and acceptable? (If yes, refer to Delegated ATS Procedure).**	**N/A**
2.16	**Is the airspace structure of sufficient dimensions with regard to expected aircraft navigation performance and manoeuvrability to contain horizontal and vertical flight activity (including holding patterns) and associated protected areas in both radar and non-radar environments?**	**Partial**
	Not all the protection areas have been entirely contained and this matter is the subject of the Safety Assessment (**Document 63**).	
2.17	**Have all safety buffer requirements (or mitigation of these) been identified and described satisfactorily (to be in accordance with the agreed parameters or show acceptable mitigation)? (Refer to buffer policy letter).**	**Yes**

2.	Airspace description and operational arrangements	Status
	See Section 2.12 of Part B.	
2.18	**Do ATC procedures ensure the maintenance of prescribed separation between traffic inside a new airspace structure and traffic within existing adjacent or other new airspace structures?**	**Yes**
	See Part B Section 4.	
2.19	**Is the airspace structure designed to ensure that adequate and appropriate terrain clearance can be readily applied within and adjacent to the proposed airspace?**	**N/A**
	No changes to airspace near the surface.	
2.20	**If the new structure lies close to another airspace structure or overlaps an associated airspace structure, have appropriate operating arrangements been agreed?**	**Yes**
	See Section 2.12 of Part B.	
2.21	**Where terminal and en-route structures adjoin, is the effective integration of departure and arrival routes achieved?**	**Yes**
	No changes have been made to the integration of routes.	

3.	Supporting Resources and Infrastructure	Status
3.1	**Is the evidence of supporting CNS infrastructure together with availability and contingency procedures complete and acceptable? The following are to be satisfied:** **▪ Communication: Is the evidence of communications infrastructure including RT coverage together with availability and contingency procedures complete and acceptable? Has this frequency been agreed with S&S Section?** **▪ Navigation: Is there sufficient accurate navigational guidance based on in-line VOR or NDB or by approved RNAV derived sources, to contain the aircraft within the route to the published RNP value in accordance with ICAO/Eurocontrol Standards? Eg. Navaids – has coverage assessment been made e.g. a DEMETER report, and if so, is it satisfactory?** **▪ Surveillance: Radar Provision – have radar diagrams been provided, and do they show that the ATS route / airspace structure can be supported?**	**Yes**
	The CNS infrastructure meets the needs of the proposed procedures.	
3.2	**Where appropriate, are there any indications of the resources to be applied, or a commitment to provide them, in line with current forecast traffic growth acceptable?**	**N/A**

4.	Maps, Charts, Diagrams	Status
4.1	**Is a diagram of the proposed airspace included in the proposal, clearly showing the dimensions and WGS84 co-ordinates? (We would expect sponsors to include clear maps and diagrams of the proposed airspace structure(s) – they do not have to accord with AC&D aeronautical cartographical standards (see CAP725), rather they should be clear and unambiguous and reflect precisely the narrative descriptions of the proposals. AC&D work would relate to regulatory consultation charts only).**	**Yes**
	Draft Charts (including Waypoint Co-ordinates) included in the ACP document. Database Coding Tabulation is included and will also be submitted within the CAP785 requirement.	

4.	Maps, Charts, Diagrams	Status
4.2	**Do the charts clearly indicate the proposed airspace change?**	**Yes**
	Flight path of proposed SIDs across the ground is depicted in the Annexes to Part B of the ACP. Minor amendments are depicted in the Impact Assessment (**Document 62**).	
4.3	**Has the Sponsor identified AIP pages affected by the Change Proposal and provided a draft amendment?**	**Yes**
	Yes, Section 9, Table 1 in Part B of this document refers. Draft AIP amendments will be submitted to AIS in due course once approval of the ACP is assured.	

5.	Operational Impact	Status
5.1	**Is the Sponsor's analysis of the impact of the change on all airspace users, airfields and traffic levels, and evidence of mitigation of the effects of the change on any of these, complete and satisfactory?** **Consideration should be given to:** **a) Impact on IFR GAT, on OAT or on VFR general aviation traffic flow in or through the area.** **b) Impact on VFR Routes.** **c) Consequential effects on procedures and capacity, ie on SIDS, STARS, holds. Details of existing or planned routes and holds.** **d) Impact on Airfields and other specific activities within or adjacent to the proposed airspace.** **e) Any flight planning restrictions and/or route requirements.**	**Yes**
	Comprehensively detailed in Section 5 of Part B of this ACP	
5.2	**Does the Stakeholder Consultation letter reflect the likely operational impact of the change?**	**Yes**
	Consultation document sighted by CAA SARG staff before release and no changes recommended.	

6.	Economic Impact	Status
6.1	**Is a provisional economic impact assessment to all categories of operations and users likely to be affected by the change included and acceptable?** **(This may include any forecast capacity gains and the cost of any resultant additional track mileage).**	**Yes**
	See Section 6 of Part B of the ACP.	

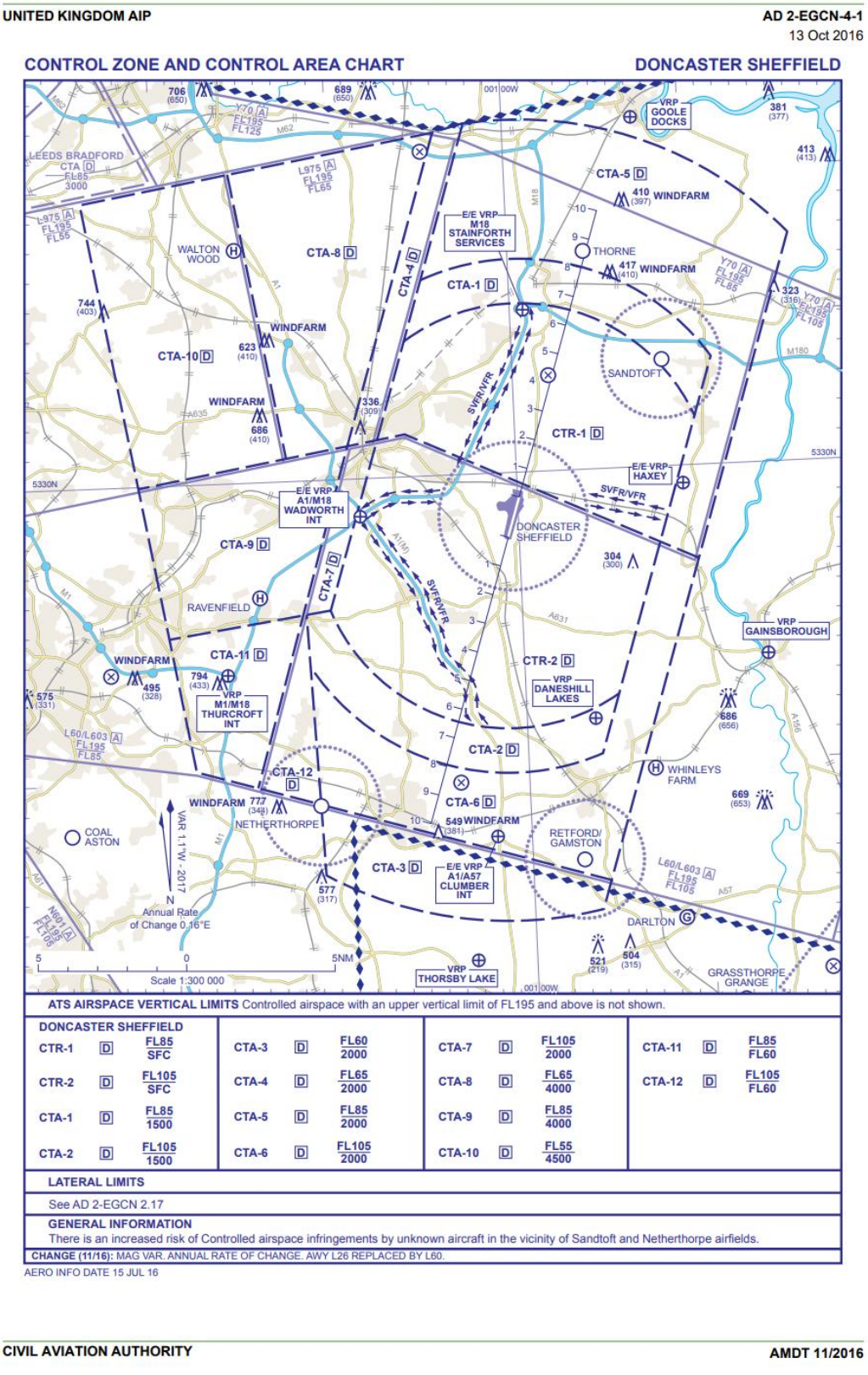
7.	Environmental Impact	Status
	See Environmental Impact Matrix appended to Part C of the ACP	**Yes**

8.	Consultation Process	Status
	See Consultation Matrix appended to Part D of the ACP	**Yes**

9.	Case Study Conclusions	Status
9.1	**Has the Sponsor met the Airspace Change Proposal requirements and Airspace Regulatory requirements above?**	**Yes**
	The requirements of CAP725 have been followed throughout this process.	
9.2	**Is the approval of the SoS for Transport required in respect of the Environmental Impact of the airspace change?**	**N/A**
9.3	**Is the approval of the MOD required in respect of National Security issues surrounding the airspace change?**	**N/A**

B. Current Charts

B.1. Airspace

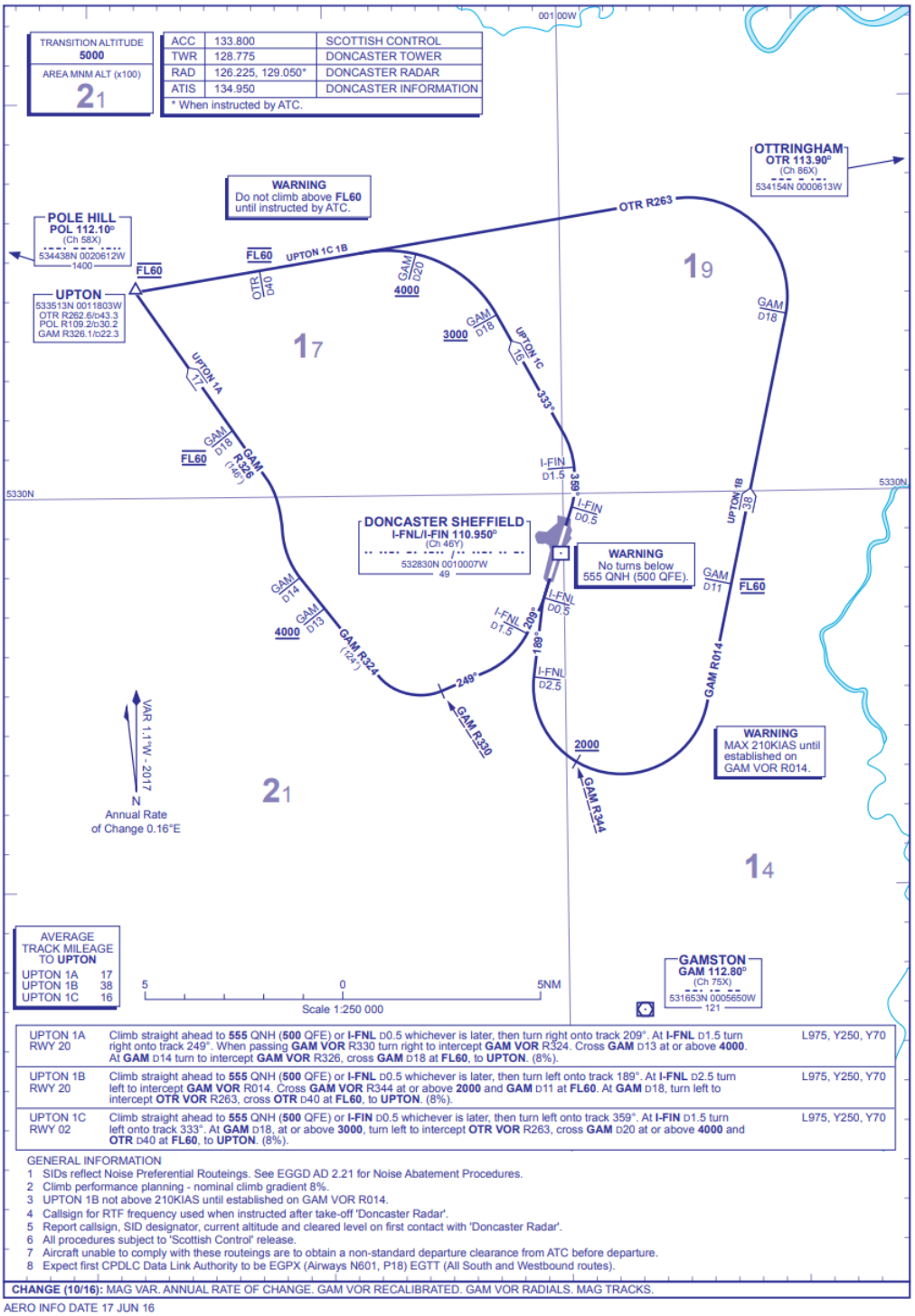


B.2. UPTON SIDs

STANDARD DEPARTURE CHART - INSTRUMENT (SID) - ICAO

DISTANCES IN NAUTICAL MILES
BEARINGS, TRACKS AND RADIALS ARE MAGNETIC
ALTITUDES AND ELEVATIONS ARE IN FEET

DONCASTER SHEFFIELD
UPTON



UPTON 1A RWY 20	Climb straight ahead to **555** QNH (**500** QFE) or **I-FNL** D0.5 whichever is later, then turn right onto track 209°. At **I-FNL** D1.5 turn right onto track 249°. When passing **GAM VOR** R330 turn right to intercept **GAM VOR** R324. Cross **GAM** D13 at or above **4000**. At **GAM** D14 turn to intercept **GAM VOR** R326, cross **GAM** D18 at **FL60**, to **UPTON**. (8%).	L975, Y250, Y70
UPTON 1B RWY 20	Climb straight ahead to **555** QNH (**500** QFE) or **I-FNL** D0.5 whichever is later, then turn left onto track 189°. At **I-FNL** D2.5 turn left to intercept **GAM VOR** R014. Cross **GAM VOR** R344 at or above **2000** and **GAM** D11 at **FL60**. At **GAM** D18, turn left to intercept **OTR VOR** R263, cross **OTR** D40 at **FL60**, to **UPTON**. (8%).	L975, Y250, Y70
UPTON 1C RWY 02	Climb straight ahead to **555** QNH (**500** QFE) or **I-FIN** D0.5 whichever is later, then turn left onto track 333°. At **I-FIN** D1.5 turn left onto track 333°. At **GAM** D18, at or above **3000**, turn left to intercept **OTR VOR** R263, cross **GAM** D20 at or above **4000** and **OTR** D40 at **FL60**, to **UPTON**. (8%).	L975, Y250, Y70

GENERAL INFORMATION
1 SIDs reflect Noise Preferential Routeings. See EGGD AD 2.21 for Noise Abatement Procedures.
2 Climb performance planning - nominal climb gradient 8%.
3 UPTON 1B not above 210KIAS until established on GAM VOR R014.
4 Callsign for RTF frequency used when instructed after take-off 'Doncaster Radar'.
5 Report callsign, SID designator, current altitude and cleared level on first contact with 'Doncaster Radar'.
6 All procedures subject to 'Scottish Control' release.
7 Aircraft unable to comply with these routeings are to obtain a non-standard departure clearance from ATC before departure.
8 Expect first CPDLC Data Link Authority to be EGPX (Airways N601, P18) EGTT (All South and Westbound routes).

CHANGE (10/16): MAG VAR. ANNUAL RATE OF CHANGE. GAM VOR RECALIBRATED. GAM VOR RADIALS. MAG TRACKS.

AERO INFO DATE 17 JUN 16

B.3. ROGAG PDRs

EGCN AD 2.22 FLIGHT PROCEDURES (continued)

Outbound to	Via	Route
West	L975	UPTON - WAL
	L975/L70	UPTON - DESIG

(b) Aircraft joining airways at UPTON will depart on an UPTON SID detailed in AD 2-EGCN-6-1. Aircraft joining Airways at ROGAG w ill depart on a ROGAG Planned Departure Route as detailed below:

East L603/Y70 ROGAG -SUPEL - BODSO L603 LAMIX - ROGAG - AMVEL	ROGAG	02	Climb straight ahead to 500 ft or I-F IN D1.0, whichever is later, turn right to intercept the GAM VOR/DME 017R from GAM VOR/DME (197R to GAM VOR/DME) and continue the climb inbound towards GAM VOR/DME. At GAM VOR/DME D5 or FL 80, whichever is later, turn left to intercept the GAM VOR/ DME 099R to ROGAG. Climb not above FL 80 initially. Climb when instructed to cross ROGAG level or above FL 160
		20 North	Climb straight ahead to 500 ft or I-FNL D0.5 whichever the later, then turn left on track 190°. At I-FNL D2.5 turn left to establish on the GAM VOR/DME 015R. At GAM VOR/ DME 015R D11 or FL 60, whichever is sooner, turn left to LAMIX then ROGAG. Climb not above FL 80 initially. Climb when instructed to cross ROGAG level or above FL 160
		20 South	Climb straight ahead to 500 ft or I-FNL D0.5, whichever is later, turn right to track 210 M. At I-FNL D1.5 turn right to track 250°M and at I-FNL D3.5 turn left to intercept the GAM VOR/DME 322R to GAM VOR/DME. At GAM VOR/DME D2 turn left to intercept the GAM VOR/DME 099R to ROGAG. Climb not above FL 80 initially. Climb when instructed to cross ROGAG level or above FL 160

Note 1: *These routes are not assessed for obstacle clearance and do not constitute Standard Instrument Departure procedures.*

Note 2: *The above routes include the Noise Preferential Routes detailed in EGCN AD 2.21.*

Note 3: *Climb Performace Planning - Nominal climb gradient 8%.*

Note 4: *Aircraft unable to comply with these routeings or climb gradients are required to obtain a non-standard clearance from ATC before departure.*

Note 5: *Depending on rate of climb, aircraft following ROGAG departures may leave controlled airspace to the East of Gamston. To remain inside controlled airspace aircraft must be above FL 110 abeam GAM and above FL 160 abeam LAMIX.*

(c) Aircraft outbound to the FIR:

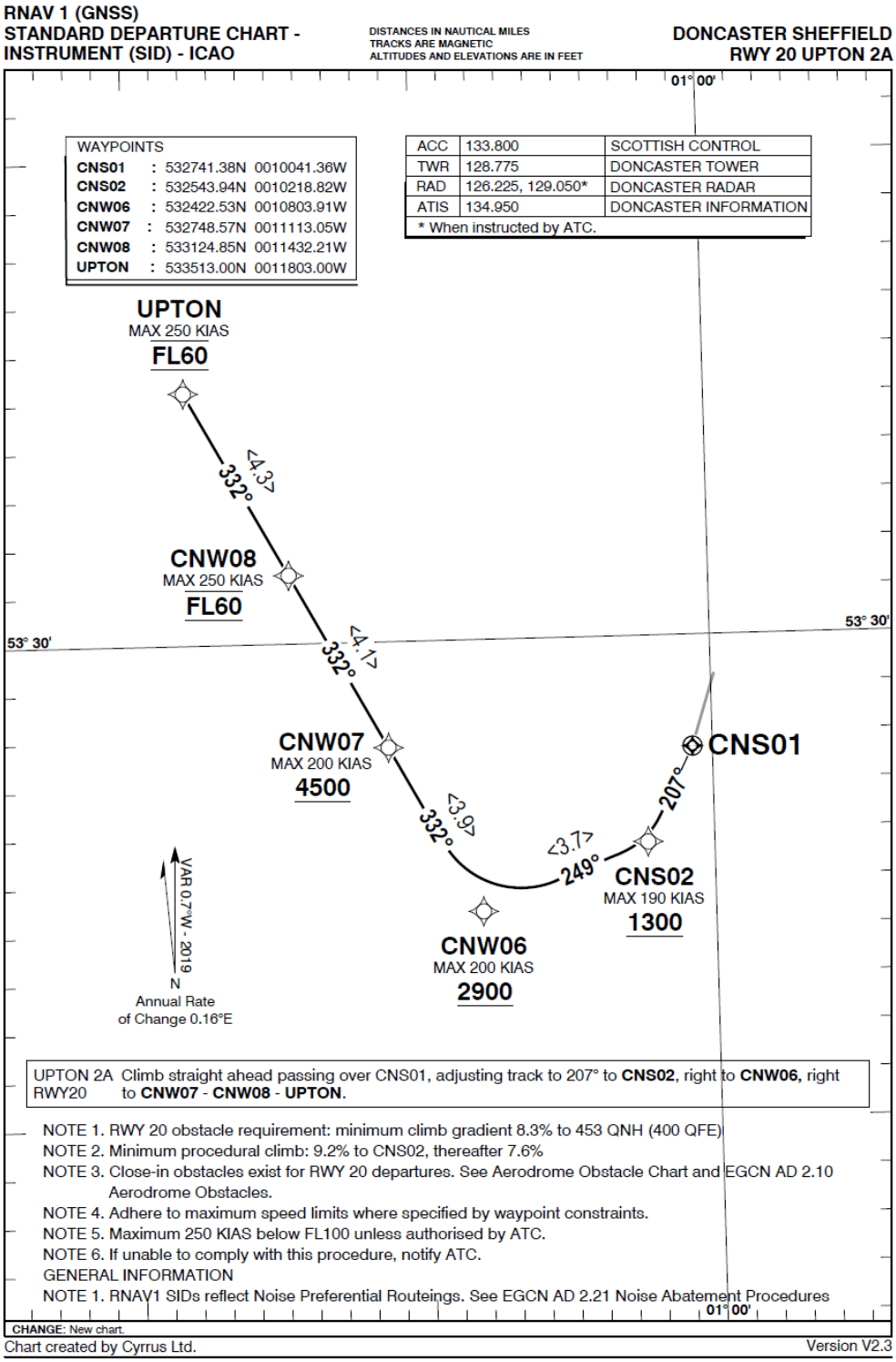
(i) IFR aircraft wishing to leave the Doncaster Sheffield CTR/CTA and enter the London FIR will be cleared by the most direct route consistent with the current traffic situation.

(ii) VFR and SVFR aircraft will usually be instructed to route via one of the Visual Reference Points (paragraph 9), not above altitude 2000 ft (aerodrome QNH).

C. Proposed Charts and Coding Tables

C.1. UPTON 2A Chart

NOT FOR OPERATIONAL USE



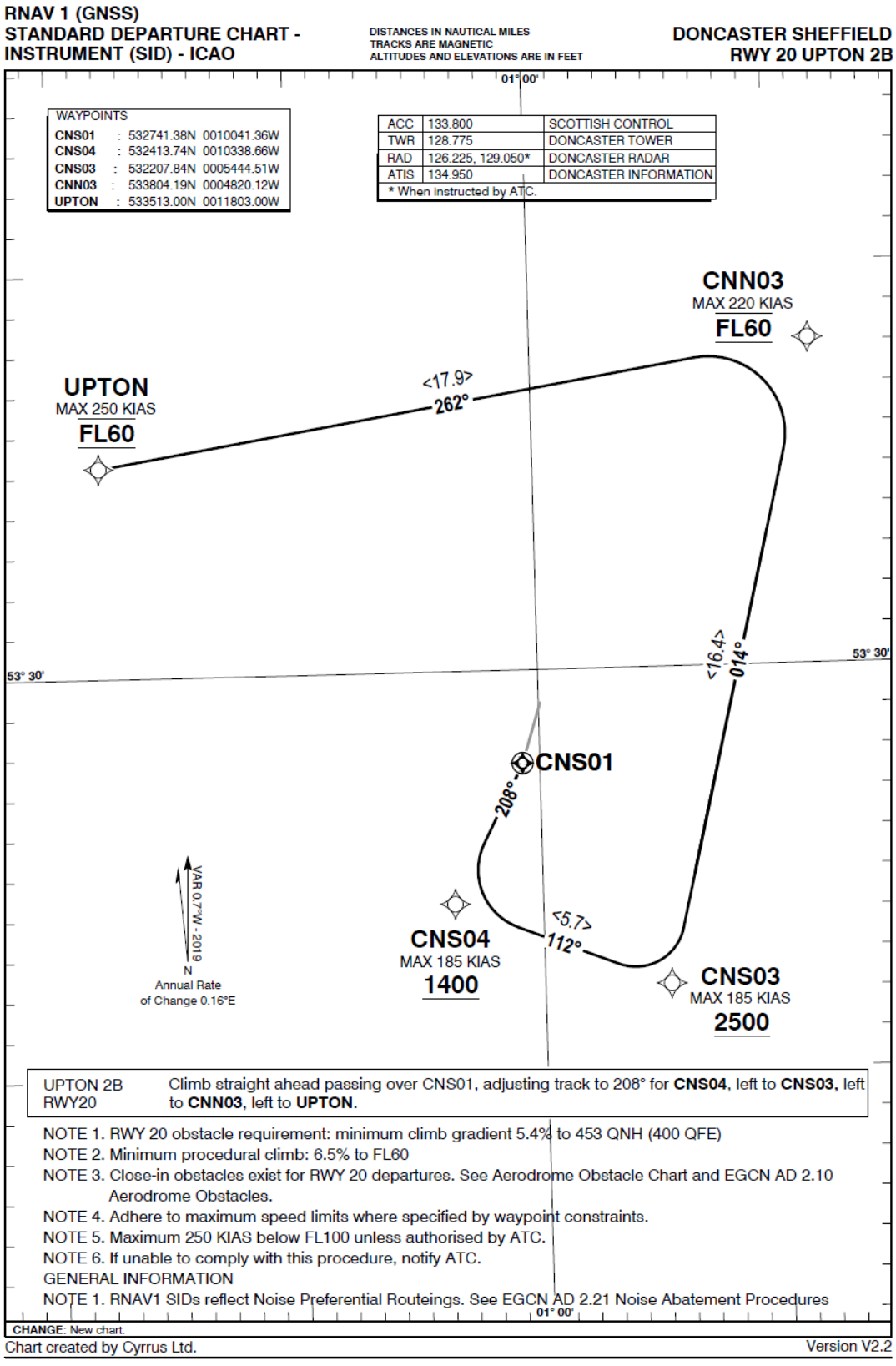
C.2. UPTON 2A Coding Table

Airport:	Doncaster Sheffield Airport
Procedure:	RNAV 1 (GNSS) UPTON 2A RWY 20
Version:	V2.3
Version date:	25/01/2019
Magnetic Variation:	0.68°W (2019)

Designator	Sequence Number	Path Terminator	Waypoint Name	Waypoint Co-ordinates	Fly-over	Course / Track °M (°T)	Distance (NM)	Turn Direction	Level Constraint (FT)	Speed Constraint (KT IAS)	Navigation Performance
UPTON 2A	001	CF	CNS01	532741.38N 0010041.36W	Y	198° (197.7)°	-	-	-	-190	RNAV1
UPTON 2A	002	CA	-	-	-	198° (197.7)°	-	-	+553	-190	RNAV1
UPTON 2A	003	CF	CNS02	532543.94 N 0010218.82 W	N	207° (206.4)°	-	R	+1300	-190	RNAV1
UPTON 2A	004	TF	CNW06	532422.53 N 0010803.91 W	N	249° (248.5)°	3.7	R	+2900	-200	RNAV1
UPTON 2A	005	TF	CNW07	532748.57 N 0011113.05 W	N	332° (331.3)°	3.9	-	+4500	-200	RNAV1
UPTON 2A	006	TF	CNW08	533124.85 N 0011432.21W	N	332° (331.2)°	4.1	-	+5000	-250	RNAV1
UPTON 2A	007	TF	UPTON	533513.00 N 0011803.00 W	N	332° (331.2)°	4.3	-	FL60	-	RNAV1

C.3. UPTON 2B Chart

NOT FOR OPERATIONAL USE



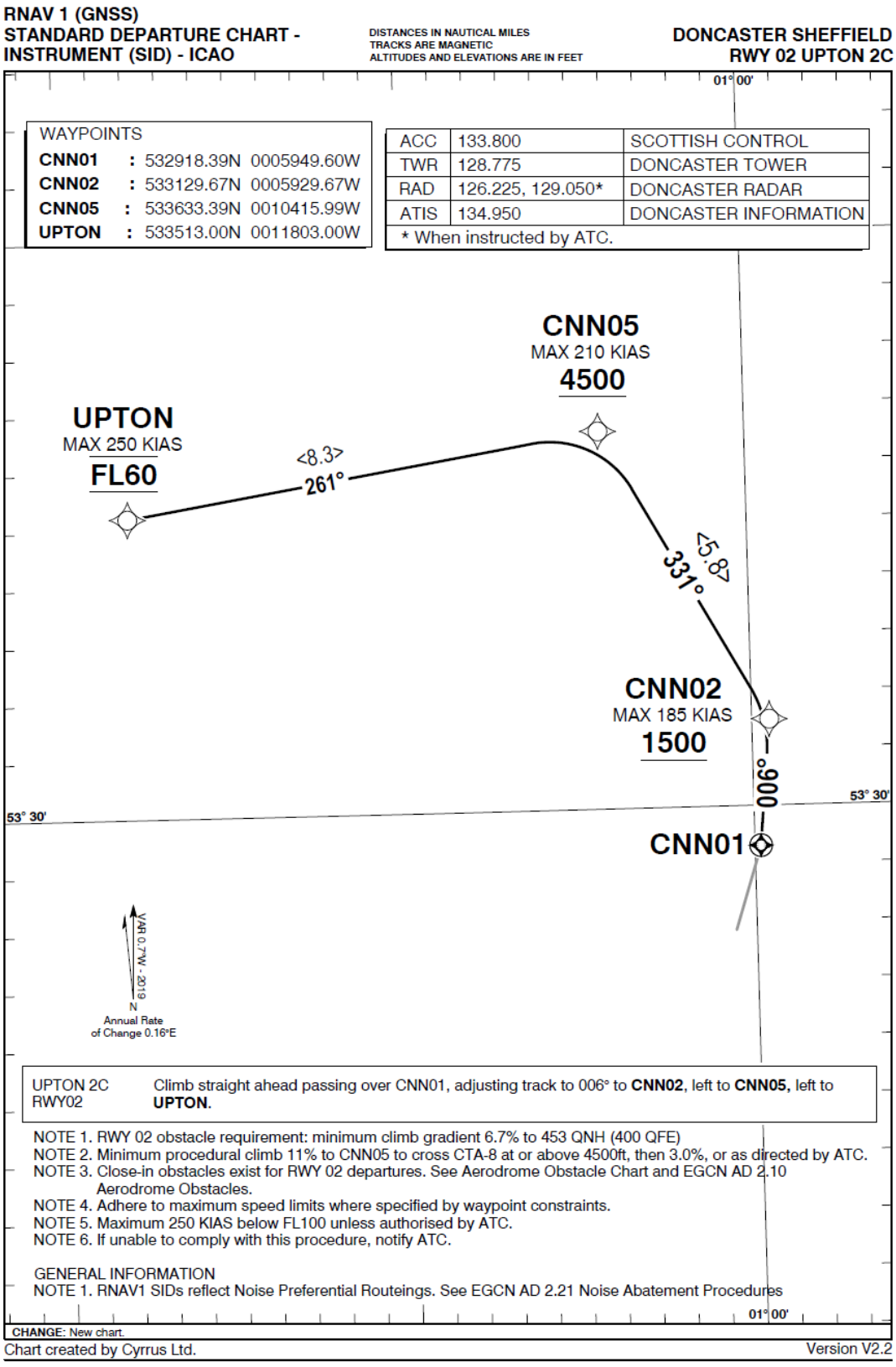
C.4. UPTON 2B Coding Table

Airport:	Doncaster Sheffield Airport
Procedure:	RNAV 1 (GNSS) UPTON 2B RWY 20
Version:	V2.2
Version date:	24/01/2019
Magnetic Variation:	0.68°W (2019)

Designator	Sequence Number	Path Terminator	Waypoint Name	Waypoint Co-ordinates	Fly-over	Course / Track °M (°T)	Distance (NM)	Turn Direction	Level Constraint (FT)	Speed Constraint (KT IAS)	Navigation Performance
UPTON 2B	001	CF	CNS01	532741.38N 0010041.36W	Y	198° (197.7)°	-	-	-	-185	RNAV1
UPTON 2B	002	CA	-	-	-	198° (197.7)°	-	-	+553	-185	RNAV1
UPTON 2B	003	CF	CNS04	532413.74 N 0010338.66 W	N	208° (207.0)°	-	L	+1400	-185	RNAV1
UPTON 2B	004	TF	CNS03	532207.84 N 0005444.51W	N	112° (111.5)°	5.7	L	+2500	-185	RNAV1
UPTON 2B	005	TF	CNN03	533804.19 N 0004820.12 W	N	014° (013.4)°	16.4	L	FL60	-220	RNAV1
UPTON 2B	006	TF	UPTON	533513.00 N 0011803.00 W	N	262° (261.0)°	17.9	-	FL60	-250	RNAV1

C.5. UPTON 2C Chart

NOT FOR OPERATIONAL USE

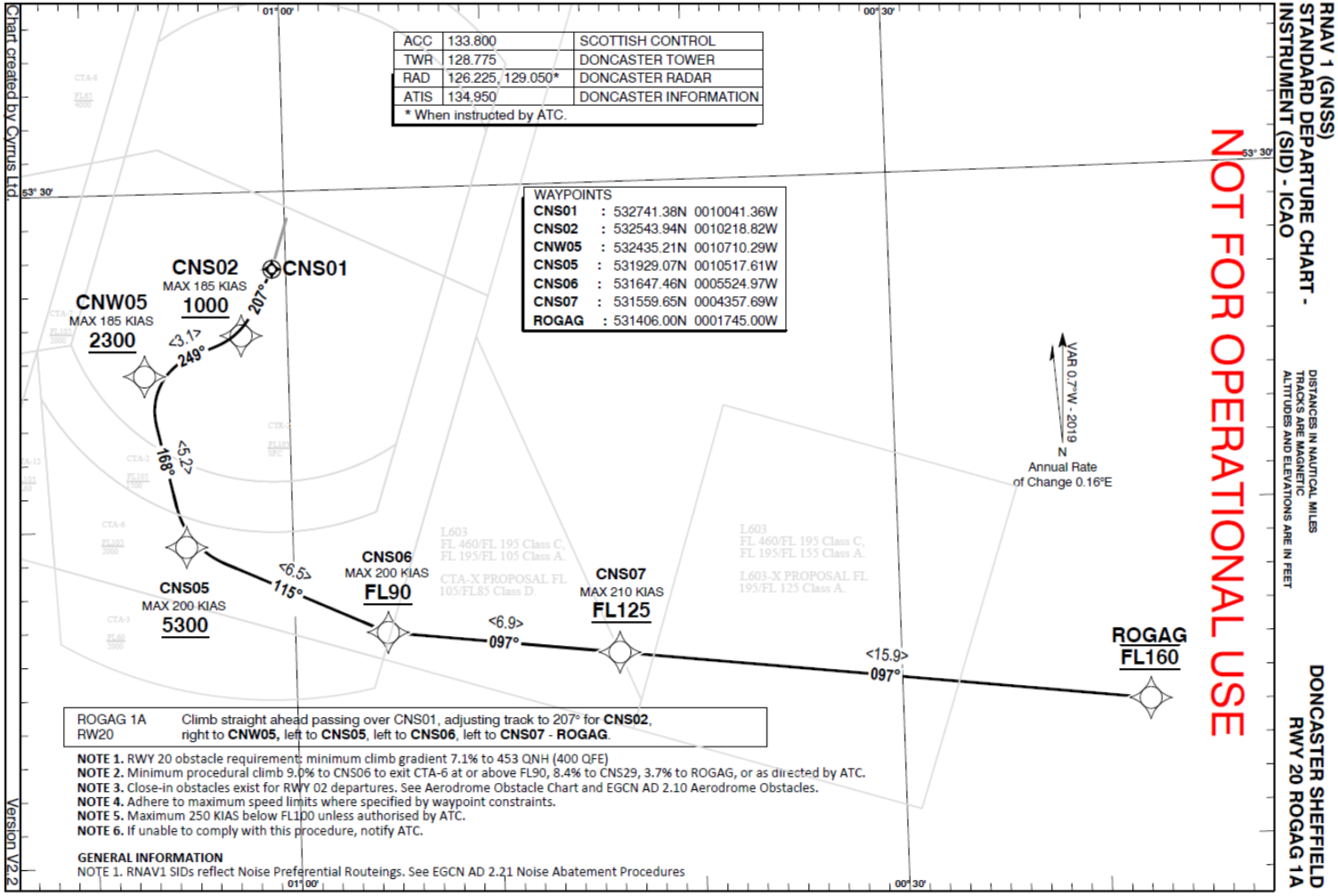


C.6. UPTON 2C Coding Table

Airport:	Doncaster Sheffield Airport
Procedure:	RNAV 1 (GNSS) UPTON 2C RWY 02
Version:	V2.1
Version date:	18/01/2019
Magnetic Variation:	0.68°W (2019)

Designator	Sequence Number	Path Terminator	Waypoint Name	Waypoint Co-ordinates	Fly-over	Course / Track °M (°T)	Distance (NM)	Turn Direction	Level Constraint (FT)	Speed Constraint (KT IAS)	Navigation Performance
UPTON 2C	001	CF	CNN01	53°29'18.39"N 000°59'49.60"W	Y	018° (017.7)°	-	-	-	-185	RNAV1
UPTON 2C	002	CA	-	-	-	018° (017.7)°	-	-	+553	-185	RNAV1
UPTON 2C	003	CF	CNN02	533129.67 N 0005929.67 W	N	006° (005.2)°	-	L	+1500	-185	RNAV1
UPTON 2C	004	TF	CNN05	533633.39 N 0010415.99 W	N	331° (330.7)°	5.8	L	+4500	-210	RNAV1
UPTON 2C	005	TF	UPTON	533513.00 N 0011803.00 W	N	261° (260.8)°	8.3	-	FL60	-250	RNAV1

C.7. ROGAG 1A Chart

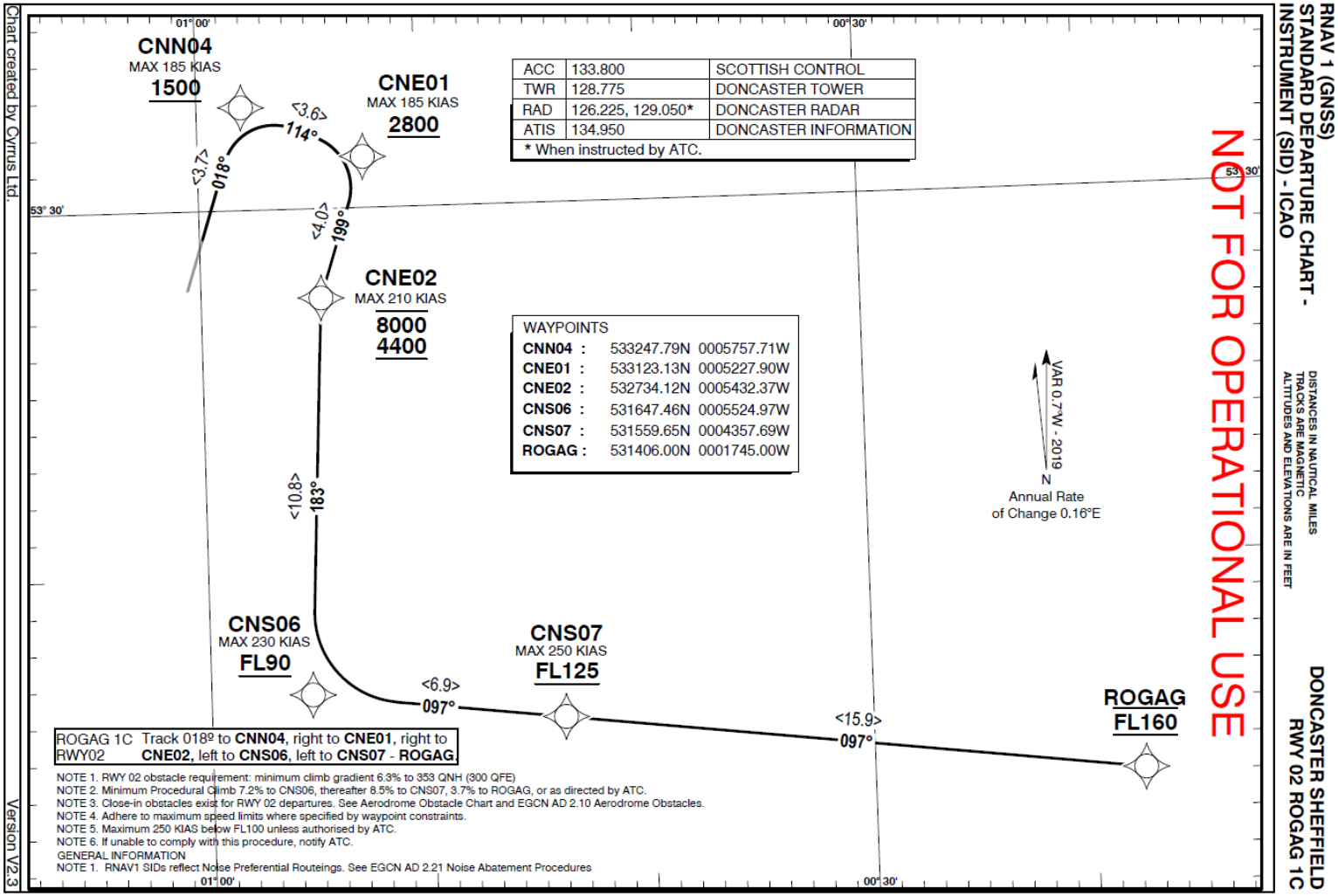


C.8. ROGAG 1A Coding Table

Airport:	Doncaster Sheffield Airport
Procedure:	RNAV 1 (GNSS) ROGAG 1A RWY 20
Version:	V2.2
Version date:	23/01/2019
Magnetic Variation:	0.68°W (2019)

Designator	Sequence Number	Path Terminator	Waypoint Name	Waypoint Co-ordinates	Fly-over	Course / Track °M (°T)	Distance (NM)	Turn Direction	Level Constraint (FT)	Speed Constraint (KT IAS)	Navigation Performance
ROGAG 1A	001	CF	CNS01	532741.38N 0010041.36W	Y	198° (197.7)°	-	-	-	-185	RNAV1
ROGAG 1A	002	CA	-	-	-	198° (197.7)°	-	-	+553	-185	RNAV1
ROGAG 1A	003	CF	CNS02	532543.94 N 0010218.82 W	N	207° (206.4)°	-	R	+1000	-185	RNAV1
ROGAG 1A	004	TF	CNW05	532435.21 N 0010710.29 W	N	249° (248.5)°	3.1	L	+2300	-185	RNAV1
ROGAG 1A	005	TF	CNS05	531929.07 N 0010517.61 W	N	168° (167.6)°	5.2	L	+5300	-200	RNAV1
ROGAG 1A	006	TF	CNS06	531647.46 N 0005524.97 W	N	115° (114.4)°	6.5	L	+FL90	-200	RNAV1
ROGAG 1A	007	TF	CNS07	531559.65 N 0004357.69 W	N	097° (096.5)°	6.9	-	+FL125	-210	RNAV 1
ROGAG 1A	008	TF	ROGAG	531406.00 N 0001745.00 W	N	097° (096.7)°	15.9	-	FL160	-	RNAV 1

C.9. ROGAG 1C Chart



C.10. ROGAG 1C Coding Table

Airport:	Doncaster Sheffield Airport
Procedure:	RNAV 1 (GNSS) ROGAG 1C RWY 02
Version:	V2.2
Version date:	15/01/2019
Magnetic Variation:	0.68° (2019)

Designator	Sequence Number	Path Terminator	Waypoint Name	Waypoint Co-ordinates	Fly-over	Course / Track °M (°T)	Distance (NM)	Turn Direction	Level Constraint (FT)	Speed Constraint (KT IAS)	Navigation Performance
ROGAG 1C	001	CF	CNN04	533247.79 N 0005757.71 W	N	018° (017.7)°	3.7	R	1000	-185	RNAV1
ROGAG 1C	002	TF	CNE01	533123.13 N 0005227.90 W	N	114° (113.3)°	3.6	R	1000	-185	RNAV1
ROGAG 1C	003	TF	CNE02	532734.12 N 0005432.37 W	N	199° (198.0)°	4.0	L	+4400 -FL80	-210	RNAV1
ROGAG 1C	004	TF	CNS06	531647.46 N 0005524.97 W	N	183° (182.8)°	10.8	L	+FL90	-230	RNAV1
ROGAG 1C	005	TF	CNS07	531559.65 N 0004357.69 W	N	097° (096.5)°	6.9	-	+FL125	-250	RNAV1
ROGAG 1C	006	TF	ROGAG	531406.00 N 0001745.00 W	N	097° (096.7)°	15.9	-	FL160	-	RNAV1

C.11. Omni-Directional Departures

C.11.1. Cyrrus Ltd were commissioned by Doncaster Sheffield Airport (DSA) to design Omnidirectional Departures for aircraft unable to fly new RNAV Standard Instrument Departures (SIDs). This would include aircraft which are non-RNAV1 capable, non-GNSS equipped and/or not capable of complying with the demands of the SID procedures.

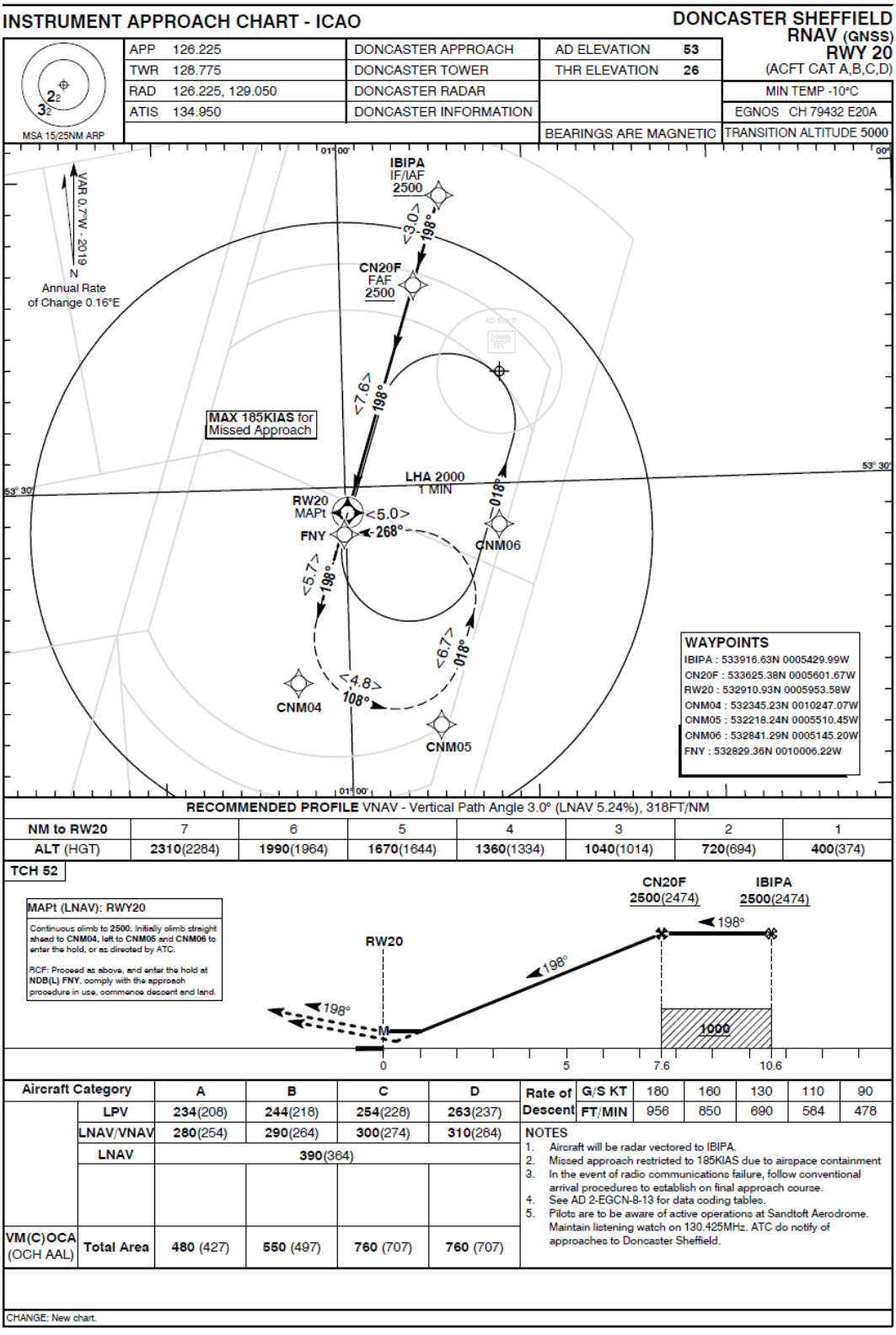
C.11.2. The departures are designed with the intention for aircraft to fly to an altitude of 3500ft Above Mean Sea Level (AMSL), based on a minimum Procedure Design Gradient (PDG) of 7% (deemed an efficient, reasonable and acceptable PDG for all operators), before executing a turn. Climbing straight ahead to 3500ft is the best option to allow for the subsequent turns to the North (UPTON) or South (ROGAG).

C.11.3. The following is to be added to EGCN AD 2.22:

			Omnidirectional Departures
Runway	**Direction of Turn**	**Description**	**Restrictions**
02	-	Climb straight ahead on track 019° MAG until reaching 3500ft, then turn on track to en-route safety altitude or as directed by radar.	Minimum Climb Gradient 7% for operational reasons.
20	-	Climb straight ahead on track 199° MAG until reaching 3500ft, then turn on track to en-route safety altitude or as directed by radar	Minimum Climb Gradient 7% for operational reasons.

C.12. RNAV (GNSS) APCH RWY20 Chart

NOT FOR OPERATIONAL USE



C.13. RNAV (GNSS) APCH RWY20 Coding Tables

Airport:	Doncaster Sheffield
Procedure:	RNAV (GNSS) RWY 20
Version:	V2.2
Version date:	19/02/19
Magnetic Variation:	0.68° W (2019)

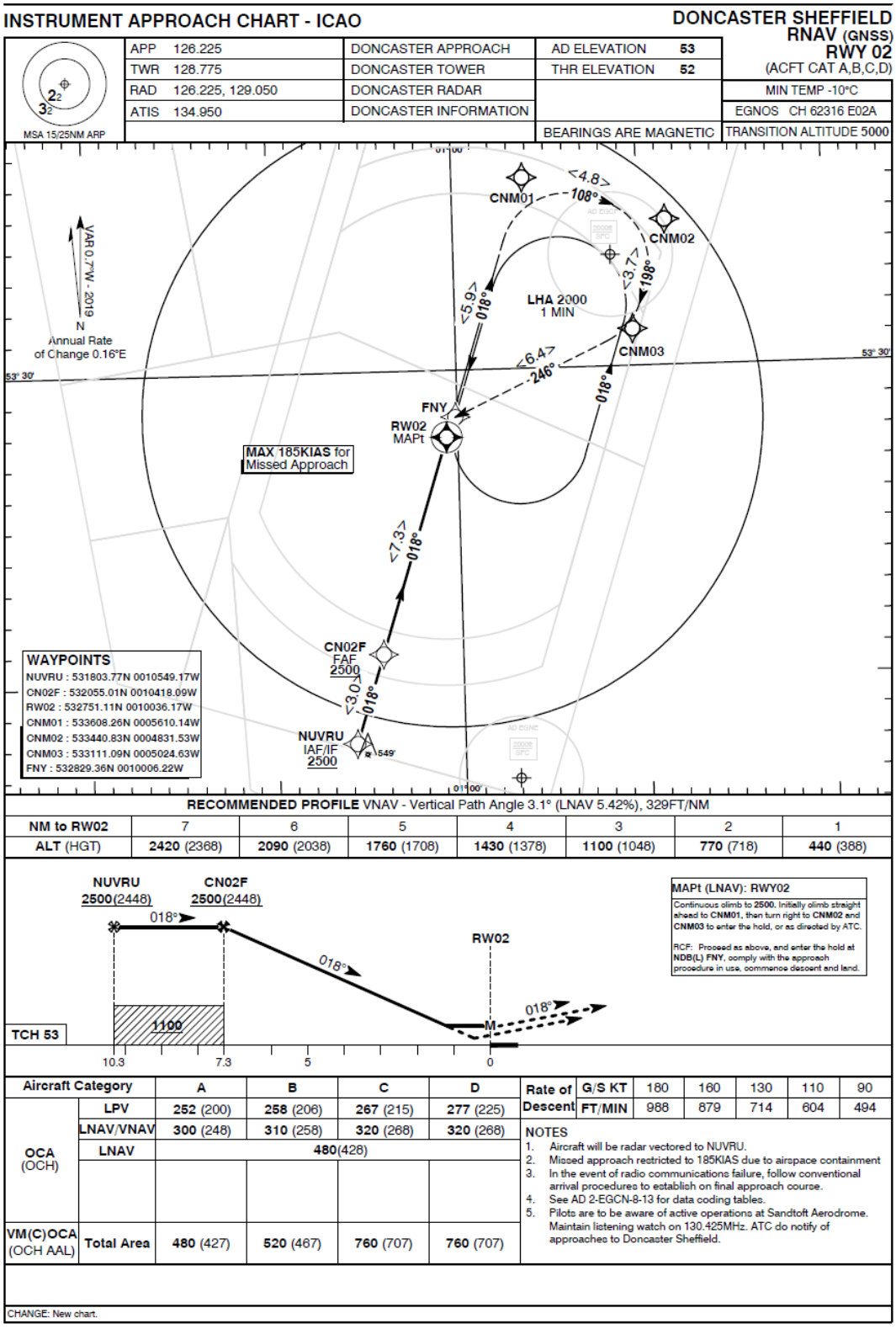
Designator	Sequence Number	Path Terminator	Waypoint Name	Fly-over	Course / Track °M (°T)	Turn Direction	Level Constraint (FT)	Speed Constraint (KT IAS)	Co-ordinates	Remarks and Distance to MAPt
RW20	001	IF	IBIPA	N	-	-	2500	-	533916.63N / 0005429.99W	IAF / IF / 10.6NM
RW20	002	TF	CN20F	N	198° (197.7)°	-	2500	-	533625.38N / 0005601.67W	FAF / 7.6NM
RW20	003	TF	RW20	Y	198° (197.7)°	-	-	-	532910.93N / 0005953.58W	MAPt
RW20	004	CF	CNM04	N	198° (197.7)°	L	-	185	532345.23N / 0010247.07W	-
RW20	005	TF	CNM05	N	108° (107.6)°	L	-	185	532218.24N 0005510.45W	-
RW20	006	TF	CNM06	N	018° (017.7)°	L	-	185	532841.29N 0005145.20W	-
RW20	007	TF	FNY	N	268° (267.8)°	-	2500	-	532829.36N / 0010006.22W	-

Airport:	Doncaster Sheffield
Procedure:	RNAV (GNSS) RWY 20 HOLD
Version:	V1.0
Version date:	19/02/19
Magnetic Variation:	0.68° W (2019)

Designator	Sequence Number	Path Terminator	Waypoint Name	Fly-over	Course / Track °M (°T)	Turn Direction	Level Constraint (FT)	Speed Constraint (KT IAS)	Co-ordinates	Remarks and Distance to MAPt
RW20	001	HM	FNY	Y	198° (197.7)°	L	2500	-	532829.36N / 0010006.22W	-

C.14. RNAV (GNSS) APCH RWY02 Chart

NOT FOR OPERATIONAL USE



C.15. RNAV (GNSS) APCH RWY02 Coding Tables

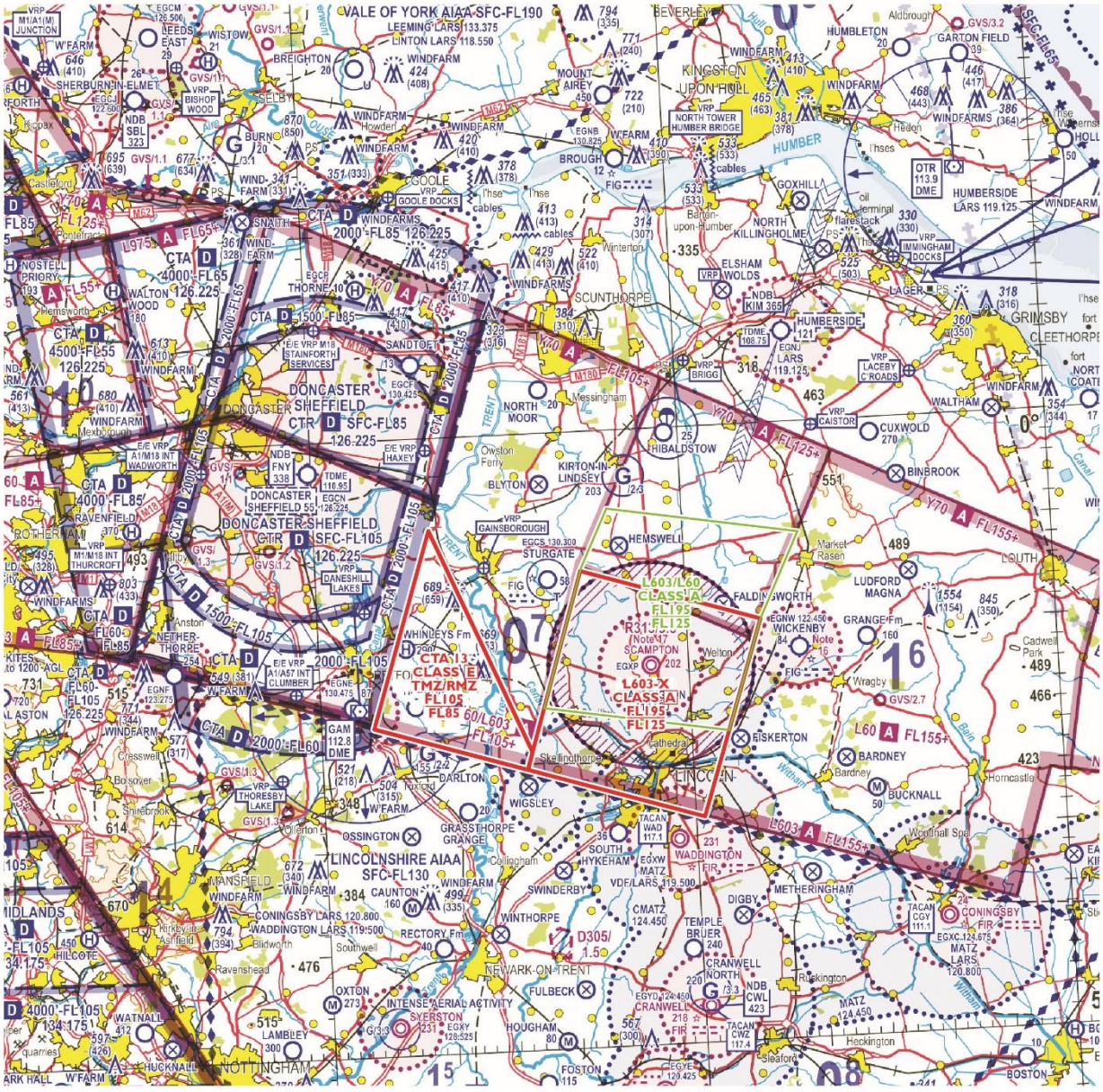
Airport:	Doncaster Sheffield Airport
Procedure:	RNAV (GNSS) RWY 02
Version:	V2.3
Version date:	07/02/19
Magnetic Variation:	0.68° W (2019)

Designator	Sequence Number	Path Terminator	Waypoint Identifier	Fly-over	Course / Track °M (°T)	Turn Direction	Level Constraint (FT)	Speed Constraint (KT IAS)	Co-ordinates	Remarks and Distance to MAPt
RW02	001	IF	CN02I	-	-	-	2500	-	531803.77N / 0010549.17W	IAF / IF / 10.3NM
RW02	002	TF	CN02F	-	018° (017.7)°	-	2500	-	532055.01N / 0010418.09W	FAF / 7.3NM
RW02	003	TF	RW02	Y	018° (017.7)°	-	-	-	532751.11N / 0010036.17W	MAPt
RW02	004	CF	CNM01	-	018° (017.7)°	R	-	185	533608.26N / 0005610.14W	-
RW02	005	TF	CNM02	-	108° (107.7)°	R	-	185	533440.83N / 0004831.53W	-
RW02	006	TF	CNM03	-	198° (197.8)°	R	-	185	533111.09N / 0005024.63W	-
RW02	007	TF	FNY	-	246° (245.1)°	-	2500	-	532829.36N / 0010006.22W	-

Airport:	Doncaster Sheffield Airport
Procedure:	RNAV (GNSS) RWY 02 HOLD
Version:	V1.0
Version date:	01/02/18
Magnetic Variation:	0.68° W (2019)

Designator	Sequence Number	Path Terminator	Waypoint Identifier	Fly-over	Course / Track °M (°T)	Turn Direction	Level Constraint (FT)	Speed Constraint (KT IAS)	Co-ordinates	Remarks and Distance to MAPt
RW02	001	HM	FNY	Y	198° (197.7)°	L	2500	-	532829.36N / 0010006.22W	HOLD

C.16. 1:500,000 VFR Chart with Proposed Airspace Change



Note: If this proposal is adopted, the portions of Y70, L603 and L60 between Humberside and Lincoln will all have the same base level (FL125) and will not appear as complex as is depicted above.

Graphic being changed to reflect CTA-X as CTA-13 (Class E (TMZ/RMZ))