Communications Department
External Information Services

[redacted]

1 August 2018
EIR Reference: E0003795

Dear [redacted]

I am writing in respect of your request, that we received on 4 July 2018, for the release of information held by the Civil Aviation Authority (CAA). Having considered your request in line with the provisions of the Environmental Information Regulations 2004, we are able to provide the information below.

1. Can you please identify (preferably with a plan) the authorised flight path for aircraft taking off from Bristol Airport in an East to West direction particularly in relation to my home town of Clevedon. Similarly the approach for aircraft landing West to East.

The published departure and arrival procedures associated with Bristol airport are available in the UK Aeronautical Information Publication (AIP) which can be found at:
http://www.nats-uk.ead-it.com/public/index.php%3Foption=com_content&task=blogcategory&id=36&Itemid=85.html

In particular, the BADIM 1X Standard Instrument Departure (SID) is located over/near Clevedon.

Details on the airport's Noise Abatement Procedures can be found within the UK AIP under 'Bristol Aerodrome – Textual Data' (see AD 2.21):
http://www.nats-uk.ead-it.com/public/index.php%3Foption=com_content&task=blogcategory&id=36&Itemid=85.html

Information on Bristol airport's noise management, their current and draft Noise Action Plan 2019-2024 consultation, including a 'Where aircraft fly' presentation, can be found on the airport's website at:
https://www.bristolairport.co.uk/about-us/environment/noise-management

2. Can you please confirm the date and by what legal process this flight path was authorised and identify the relevant documents.

Standard Instrument Departure (SID) routes from Bristol airport, including the BADIM 1X SID, were implemented in 2006. These were developed as part of a joint airspace change proposal (ACP) for Bristol and Cardiff, which was progressed in accordance with the airspace change process (CAP725) in place at the time.

The attached documents explain the proposal, and the CAA's decision to approve it.

We have redacted personal information where disclosure of such personal information would be unfair. The individuals concerned would not have had an expectation that their personal data would be disclosed, and the CAA can identify no legitimate interest that would be served by disclosing this personal information. Disclosure would therefore be a breach of one of the data protection principles contained in Article 5 of the General Data Protection Regulation, specifically Article 5(1)(a), which states that personal data shall be 'processed lawfully, fairly and in a transparent manner in relation to the data subject …' Regulation 13(1) of the EIR provides an exception from the duty to disclose information that would contravene any of the data protection principles.

3. Can you please confirm the authorised hours for the operation of flights to and from Bristol Airport.

Details of the airport's operational hours can be found within the UK AIP under 'Bristol Aerodrome – Textual Data' (see AD 2.3):
http://www.nats-uk.ead-it.com/public/index.php%3Foption=com_content&task=blogcategory&id=36&Itemid=85.html

4. Can you please confirm how aircraft movements and hours of operation are monitored and what action is taken to ensure aircraft remain within the authorised flight path and hours of operation.

The CAA is not directly involved in the provision of Air Traffic Control (ATC), nor is it responsible for monitoring or maintaining data on daily aircraft movements and routes flown, that is the responsibility of the local licensed ATC service provider.

Information relating to the monitoring of aircraft movements (including track keeping), the monitoring of operational hours and the airport's Noise Control Scheme can be found here: https://www.bristolairport.co.uk/about-us/environment/noise-management.

If you require any additional information above and beyond what is published on Bristol airport's website, we suggest you contact the airport directly as they are best placed to provide further advice and guidance.

5. In the light of the planned expansion of Bristol Airport will the current flight path be reviewed. If so can you please confirm what process is adopted and what steps will be taken to publicise the proposed flight path to the general public and local residents. In addition what opportunities will be provided to enable them to express their opinion and if appropriate influence the outcome of the proposals.

The airport is solely responsible for determining their published instrument flight procedures (departure and arrival routes) in conjunction with airport users and any relevant local planning authority clauses (e.g. Section 106 Agreement).

Should Bristol airport determine that these procedures need to change they would be required to follow the Airspace Change Process as detailed in CAP 1616. CAP 1616

specifies a seven-stage process of development, consultation and approval and the process reflects the Directions given to us by the Secretaries of State for Transport and Defence under the Transport Act 2000, together with the Secretary of State's Guidance to the CAA on its environmental responsibilities.

Further information on our new process (CAP 1616) is available on our website at: http://www.caa.co.uk/Commercial-industry/Airspace/Airspace-change/Airspace-Change/.

If you are not satisfied with how we have dealt with your request in the first instance you should approach the CAA in writing at:-

Caroline Chalk
Head of External Information Services
Civil Aviation Authority
Aviation House
Gatwick Airport South
Gatwick
RH6 0YR

caroline.chalk@caa.co.uk

The CAA has a formal internal review process for dealing with appeals or complaints in connection with requests under the Environmental Information Regulations. The key steps in this process are set in the attachment.

Should you remain dissatisfied with the outcome you have a right to appeal against the decision by contacting the Information Commissioner at:-

Information Commissioner's Office
FOI/EIR Complaints Resolution
Wycliffe House
Water Lane
Wilmslow
SK9 5AF
https://ico.org.uk/concerns/

If you wish to request further information from the CAA, please use the form on the CAA website at http://publicapps.caa.co.uk/modalapplication.aspx?appid=24.

Yours sincerely

Mark Stevens
External Response Manager

CAA INTERNAL REVIEW & COMPLAINTS PROCEDURE

- The original case to which the appeal or complaint relates is identified and the case file is made available;
- The appeal or complaint is allocated to an Appeal Manager, the appeal is acknowledged and the details of the Appeal Manager are provided to the applicant;
- The Appeal Manager reviews the case to understand the nature of the appeal or complaint, reviews the actions and decisions taken in connection with the original case and takes account of any new information that may have been received. This will typically require contact with those persons involved in the original case and consultation with the CAA Legal Department;
- The Appeal Manager concludes the review and, after consultation with those involved with the case, and with the CAA Legal Department, agrees on the course of action to be taken;
- The Appeal Manager prepares the necessary response and collates any information to be provided to the applicant;
- The response and any necessary information is sent to the applicant, together with information about further rights of appeal to the Information Commissioners Office, including full contact details.

Directorate of Airspace Policy

Civil Aviation Authority

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See Distribution

13 June 2006
Ref 8AP/66/03/09/01

INFORMATION LETTER

Dear Colleague,

INTRODUCTION OF CLASS D CONTROLLED AIRSPACE IN THE VICINITY OF BRISTOL AND CARDIFF INTERNATIONAL AIRPORTS

INTRODUCTION

1.1 In July 2005 the Directorate of Airspace Policy received a formal joint proposal from Bristol and Cardiff Airports to revise the airspace arrangements in their vicinity, with a target implementation date of 16 March 2006. In accordance with the Airspace Change Process[1], Regulatory Consultation with the National Air Traffic Management Advisory Committee (NATMAC) and affected local non-aviation bodies was launched on 27 September 2005 and ended on 16 December 2005. It subsequently proved necessary to seek additional supporting environmental evidence from the Change Sponsors and to subject this to rigorous scrutiny.

1.2 The purpose of this letter is to advise you both of the proposal and my subsequent decision on it, based upon my statutory duties as set out in Section 70 of the Transport Act 2000 (the Act), the CAA (Air Navigation) Directions 2001, as varied in 2004 (the Directions), and Guidance to the CAA on Environmental Objectives relating to the Exercise of its Air Navigation Functions issued in 2002 by the then Department for Transport, Local Government and the Regions (the Guidance).

1.3 The Change Sponsors have sought, through the introduction of changes to local airspace arrangements and against a background of sustained airport growth, to sustain (and, where possible, enhance) flight safety, improve the efficiency of aircraft operations to and from both airports, and to reduce the environmental impacts of their operations upon local communities. Specifically, the proposal sought to enhance the protection of public transport movements in the critical arrival and departure phases of flight through better containment of current and proposed procedures within controlled airspace. Operational efficiency would be enhanced through the introduction of Standard Instrument Departure procedures (SIDs) and Standard Arrival Routes (STARs). Instrument Approach Procedures as currently published in the Aeronautical Information Publication (AIP) would remain unchanged.

[1] As described in Civil Air Publication (CAP) 724 'The Airspace Charter' and guidance published in CAP725.

1.4 In addition to operational gains, environmental benefits would accrue from the introduction of the proposed SIDs and revisions to Bristol's Noise Preferential Routes (NPRs). Finally, the proposal would improve the opportunities for pilots to apply Continuous Descent Approach (CDA) techniques.

1.5 The CAA must exercise its air navigation functions so as to impose on providers of air traffic services the minimum restrictions that are consistent with the exercise of those functions.[1] Where there is a conflict between the application of the provisions, the CAA is given discretion to apply these in the manner it thinks reasonable having regard to the provisions as a whole.[2] In reaching a decision on the way to proceed I have carefully considered whether the proposal meets my statutory obligations.

STATUTORY DUTIES

2 Transport Act 2000

2.1 Safety

2.1.1 My primary duty is to maintain a high standard of safety in the provision of air traffic services and this takes primacy over all other duties.[3] In this respect I am satisfied that the proposed airspace design can be safely adopted. Operations to and from Bristol and Cardiff Airport are being conducted against a background of sustained airport growth, and whilst current operations are safe, the existing airspace arrangements are no longer considered to be adequate. Expanding the known traffic environment afforded by controlled airspace, whilst continuing to facilitate use of the airspace by adjacent airspace users and transit aircraft of all types through designating such airspace as Class D, will serve to enhance the safety of operations in the local area.

2.2 Airspace Efficiency

2.2.1 I am required to secure the most efficient use of the airspace consistent with the safe operation of aircraft and the expeditious flow of air traffic.[4] The dimensions of the proposed airspace are considered to be the minimum necessary to ensure that the required arrival sequence can be achieved without compromising the minimum separation between arriving aircraft whilst ensuring that such aircraft can both be contained within 2nm from the edge of controlled airspace and separated from aircraft departing both Airports. The introduction of SIDs and STARs will have the added benefit of reducing pilot and controller workload, thus contributing further to the efficiency of the airspace.

2.3 Airspace Users

2.3.1 I am required to satisfy the requirements of operators and owners of all classes of aircraft.[5] For this purpose I take advice from the NATMAC membership and both the airspace change sponsor and this Directorate has consulted with them on the detail of this proposal.

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[1] Transport Act 2000, Section 70(4).
[2] Transport Act 2000, Section 70(3).
[3] Transport Act 2000, Section 70(1).
[4] Transport Act 2000, Section 70(2)(a).
[5] Transport Act 2000, Section 70(2)(b).

2.3.2 The aviation community has, in the main, no objections to the proposals. 3 objections remained unresolved at the end of the initial period of Sponsor Consultation. Each of these objections related to the loss of Class G airspace and access to the proposed airspace; all were sent reassurances about access by the Change Sponsor. An unsolicited and unresolved 'expression of concern' about the loss of Class G airspace was also received. There were no expressions of opposition to the proposal from the aviation community during Regulatory Consultation.

2.3.3 As the ATS providers, Bristol and Cardiff ATC have both committed to provide access to the revised airspace, when safe and appropriate, and will maintain records of refusal of service that will be subject to scrutiny at periodic intervals. I am satisfied that the ATC units at both airports will continue to provide the current level of service provision both within and outside the revised airspace, and that the revised structures will not be detrimental to airspace users as a whole.

2.4 Interests of Other Parties.

2.4.1 I am required to take account of the interests of any person (other than an owner or operator of an aircraft) in relation to the use of any particular airspace or the use of airspace generally.[1] The Change Sponsor has consulted widely with local government authorities and non-governmental organisations whose areas of responsibility or interest lie beneath the new airspace. I am therefore content that the interests of affected non-aviation parties have been satisfied.

2.5 Environmental Objectives and Impact

2.5.1 In performing my statutory duties, I am obliged to take account of the Guidance on environmental objectives provided by the Secretary of State. In considering this airspace change proposal and following a robust assessment of the proposals by my expert Environmental Research and Consultancy Department (ERCD), I determined that the evidence supporting the case for the establishment of SIDs and STARs, plus the revisions to Bristol's NPRs, was sufficiently robust to warrant their introduction at the same time as the airspace structure changes. My detailed considerations of the environmental aspects of Bristol and Cardiff's proposals are covered in section 3 below.

2.6 Integrated operation of ATS

2.6.1 I am required to facilitate the integrated operation of air traffic services provided by or on behalf of the armed forces of the Crown and other air traffic services.[2] In this respect, the Ministry of Defence has been involved in the consultation processes and have stated that they have no objections to the changes as proposed.

2.7 National Security

2.7.1 I am required to take into account the impact any airspace change may have upon matters of national security.[3] The Bristol and Cardiff airspace change proposal has taken military airspace considerations into account and I am satisfied that national security requirements will not be jeopardised by it.

2.8 International Obligations

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[1] Transport Act 2000, Section 70(2)(c).
[2] Transport Act 2000, Section 70(2)(e).
[3] Transport Act 2000, Section 70(2)(f).

2.8.1 I am required to take into account any international obligations entered into by the UK and notified by the Secretary of State.[1] No new international obligations arise as a result of the Bristol and Cardiff airspace change proposal, neither have international interfaces been affected.

2.8.2 The new airspace has been designed in accordance with national regulatory requirements and complies with ICAO Standards and recommended practices.

ENVIRONMENTAL CONSIDERATIONS

3 General

3.1 Environmental Assessment report

3.1.1 ERCD have delivered a comprehensive assessment of the environmental impact of this change. This concludes that:

- The implementation of the airspace change will not have a significant impact upon the size or shape of noise exposure contours above 57 dBA $L_{eq\ 16\ hrs}$ applicable to Bristol.

- SEL footprints demonstrate that the noise preferential routes will have a significant effect on noise distribution. In general, the benefits are significant with thousands of people removed from the 80 dBA SEL footprint for each aircraft departure. There is a relatively small increase in population contained within the 80 dBA SEL footprint for one Bristol route.

- Proposed departure and arrivals routes avoid densely populated areas as far as possible (for example, the impact of Bristol arrivals traffic flying over Bath will be reduced as aircraft will be required to fly higher and also slightly further to the north than is currently the case).

3.1.2 In addition, the environmental impact will be further lessened as a result of our refinement of a number of the proposed SIDs that will reduce the average track mileage of these compared to the original SID designs. The reduction in track mileage is expected to bring about a reduction in fuel burn per procedure and therefore engine emissions. The tactical application of radar vectors (that is, when operational conditions permit) have the potential to further reduce the noise impact of departures from Cardiff Runway 12.

3.1.3 The revised airspace arrangements are expected to increase the scope for the application of CDA techniques. CDAs are associated with environmental benefits (reduced fuel burn and reduced noise), and their application at both airports would be expected to accrue local environmental benefits. The Change Sponsors are committed to facilitating the application of CDA techniques and have been reminded of this as a condition of the proposal's approval. Both airports will need to devise CDA compliance monitoring methodology to quantify CDA-related environmental benefits.

3.1.4 Consequently, the environmental impact of the implementation of this change proposal is considered to be beneficial and there is no requirement to refer this proposal to the Secretary of State. A copy of the ERCD report is attached.

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[1] Transport Act 2000, Section 70(2)(g).

CONSULTATION

4.1 In accordance with the requirements of CAPs 724 and 725, the Change Sponsors consulted with some 112 affected airspace users and NATMAC bodies, plus 221 non-aviation organisations, including all tiers of local government in the affected area down to bodies to parish level, and non-governmental organisations such as The Environment Agency, English Nature, English Heritage, The Countryside Agency, The National Trust and local National Park authorities.

4.2 Of these 333 consultees, 81 (72%) aviation and NATMAC bodies, plus 146 (66%) non-aviation organisations responded. Of a total of 26 objections, all but 7 were resolved. Of these, three outstanding aviation objections and four non-aviation objections were considered to be 'objections in principle', unrelated to the specifics of the proposal, and have not been upheld. The Sponsor's analysis of consultation responses was considered to be satisfactory.

4.3 Reasonable steps taken to ensure all necessary consultees actually received the information. The Change Sponsor used SAEs, sent 2 hastening letters and telephoned consultees in order to elicit responses. Meetings were held with consultees where requested or considered necessary. Details of the change proposal also appeared on the Bristol and Cardiff Airport website.

4.4 Of the various NATMAC member organisations that responded to Regulatory Consultation, none objected to the proposals. In addition, the Directorate also consulted with the affected non-aviation organisations and in doing so attracted fourteen responses plus one unsolicited response from a member of the public. Three responses expressed concerns about noise and overflights generated by existing levels of traffic, another two acknowledged receipt of the letter or had no comment whilst seven sought simpler explanations of what was being proposed (this was either provided or the respondent was referred to the change sponsor); there were no expressions of objection.

4.5 I have decided it would be appropriate for non-NATMAC consultees to be informed of my regulatory decision.

REGULATORY DECISIONS

5.1 The Bristol and Cardiff airspace change proposals are considered to be safe, which satisfies my principle statutory duty. In addition, I am satisfied that the proposed revisions to the CTRs and CTAs will meet the needs of the principal users by affording the appropriate degree of containment to existing and proposed procedures within controlled airspace. Furthermore, the establishment of SIDs and STARs will bring about operational efficiencies both to the aircraft operators serving the airports and the air traffic service providers and whilst not significantly disadvantaging others.

5.2 I consider the environmental impact of the changes has been mitigated to the greatest extent possible consistent with the safe operation of aircraft and the most efficient use of the airspace and provides environmental benefits to the community as a whole.

5.3 Therefore, I am satisfied that the Change Sponsors have met safety (in particular the protection of public transport flights), efficiency and environmental requirements

and hereby approve the introduction of this change proposal. The changes will take effect from 31 August 2006 (AIRAC 9/2006) and will be subject to review by members of my staff approximately 12 months after implementation.

5.4 A description of the airspace revisions, a map illustrating these and a Glossary of Terms (for the benefit of non-aviation recipients of this letter) are enclosed.

Yours sincerely

[redacted]

Enclosures:

1. ERCD report.
2. Dimensions and design of forthcoming changes to Class D Controlled Airspace in the vicinity of Bristol and Cardiff International Airport.
3. Bristol and Cardiff Control Zone and Control Areas effective 31 August 2006 (map).
4. Glossary of Terms.

Distribution:

NATMAC Membership
Non-NATMAC Consultees

BRISTOL AND CARDIFF AIRSPACE CHANGE PROPOSAL - ENVIRONMENTAL FACTORS

Introduction

1. This paper describes the environmental factors relevant to the proposed airspace changes at Bristol International Airport and Cardiff International Airport.

Background

2. This airspace change proposal was submitted jointly by Bristol and Cardiff airports in May 2005. The primary justification for the airspace change proposal, as described in the foreword to the proposal document[1], is 'to ensure the continued safety of the increasing number of air transport movements (atm), experienced at both Bristol and Cardiff International Airports'. The airspace change proposal claims that the airspace change 'will offer the opportunity for significant environmental benefits to local communities around both airports'.

3. At a case study meeting held on 18 Jul 05, the proposal document produced was deemed to require further clarification of a number of aspects. In particular, the case study report records that appropriate noise contour footprint charts had not been presented. It should be noted that paragraph 56 of the environmental objectives[2] placed on the CAA by the Secretary of State is relevant. This paragraph is repeated below *in toto:*

> 56. Where the proposed changes may have a significant effect on the level and distribution of noise in the vicinity of an aerodrome, and would be expected to alter the size or shape of the standard daytime noise contours in use at the aerodrome, or the shape of noise footprints of the noisiest aircraft operating there at night, the consultation should include assessments of those effects on the basis of contemporary traffic levels and forecast levels where appropriate (e.g. where the change(s) would enable substantial growth in traffic or where that growth is already planned).[23] Vibration from aircraft is unlikely to be a consideration except in the immediate vicinity of an aerodrome.

4. The report noted that the environmental impact had only been presented in 'outline terms' in the proposal document. The case study report concluded that evidence will need to be sought to support claims made concerning environmental benefits of the airspace change.

5. DAP sought clarification in a letter dated 1 Aug 05 and the sponsor provided further environmental information, including noise exposure contours, in a letter dated 30 Nov 05. The noise exposure contours were presented in different formats for each airport.

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[1] Bristol and Cardiff International Airports, A Joint Proposal for Additional Controlled Airspace for Bristol and Cardiff International Airports, May 2005, Version 1.0

[2] DTLR (now DfT), Guidance to the Civil Aviation Authority on Environmental Objectives relating to the Exercise of its Air Navigation Functions, January 2002

6. Bristol provided two contour diagrams with their letter dated 30 Nov 05:
    - existing airspace showing the 57 dBA contour; and
    - standard instrument departures (SIDs) showing a forecast 57 dBA noise contour with proposed airspace.

Both diagrams showed the 57 dBA contour portrayed on a 1:250 000 scale Ordnance Survey (OS) map. Neither exhibit included contour levels higher than 57 dBA. No measure of the contour area or population/households contained therein was stated. The scale used for both diagrams hindered a clear appreciation of the extent of the contours. It was not clear whether the second contour referred to the situation immediately following the airspace change or after a period following growth in the number of air transport movements. It was later revealed that the second contour did not include any consideration of the proposed airspace change.

7. Standard UK practice is to portray noise exposure contours from 57 dBA $L_{eq,\ 16\ hrs}$ upwards at 3 dBA intervals and provide area and population/household counts for each of these L_{eq} values. It was surprising that Bristol failed to do this in view of the fact that their master plan[3] contains noise exposure contours in the standard format. Furthermore, the contours provided in the master plan are portrayed against a 1:50 000 scale OS map which enables a clearer appreciation of the extent of the contours.

8. Cardiff Airport provided four sets of contours with the letter dated 30 Nov 05:
    - summer day;
    - summer weekend;
    - winter day; and
    - winter weekend.

All four sets of contours show contours from 57 dBA to 72 dBA at 3 dB intervals portrayed against the background of a black and white OS map. The quality of the underlying map was such that it was impossible to read the textual details on the map making it difficult to assess these noise exposure contours.

9. It was not clear why Cardiff provided weekend contours as this is not common practice and these are of limited utility in assessing noise impact. The day and weekend summer contours seemed to indicate that there was a different modal split between week day and weekend. The year of assessment for these four sets of contours was not specified. ERCD assumed that the contours related to 2004. It was not clear whether the contours had been produced for an average summer day (where summer is the 92-day period from 16 June to 15 September) or whether a single summer day had been selected at random.

10. On 10 Jan 06 DAP wrote to the airspace change sponsor stating that the airspace change proposal was on hold pending provision of adequate supporting environmental evidence. It was noted that the proposal entails a change in procedure for departing aircraft, from the current situation when aircraft turn based on height criteria, to a new SID/NPR where aircraft will turn on reaching a specified range on DME. The turning points before and after the change will not necessarily be coincident. It was explained that DAP required evidence to support the sponsor's claim that noise exposure contours and SEL[4] footprints would not change as a result of the change. It was also noted that

[3] http://www.bristolairport.co.uk/about_us/planning_and_development.aspx

[4] SEL is Sound Exposure Level, a measure that takes into account the noise energy contained and the duration of a single noise event.

there was some confusion about the version of noise modelling software that had been used. Initially, Bristol's noise consultant was adamant that he had used the US FAA Integrated Noise Model (INM) version 6.2. When it was explained that version 6.2 had yet to be released by the FAA, the consultant revised his previous claim and stated that it was version 6.1 that had been used. It was pointed out to Bristol Airport that the use of INM version 6.2 was claimed in their master plan document dated October 05 and in their consultation on the night noise quota system dated 2002. It was further explained that INM version 6.2 would be released in the near future and that the two versions of the model will yield different results. INM version 6.2 was later released on 19 May 06. DAP's letter also specified the information required in order to permit environmental assessment of the proposal.

11. The sponsor provided environmental information in a letter dated 9 Feb 06 - this included an A3 booklet containing noise exposure contours and SEL footprints with a CD-ROM containing electronic versions of these diagrams. It was discovered that there were several key issues that required resolution before assessment of the environmental impact could commence.

12. First, the runway portrayed on all noise exposure contours for Bristol Airport had been plotted some 75 metres to the north and 50 metres to the east of the runway location shown on the underlying Ordnance Survey 1:50 000 Landranger map. The noise exposure contours appeared to be displaced by the same extent. It was pointed out that runway location is fundamental to the accuracy of noise modelling. Furthermore, inaccuracy in the fundamentals raises questions about the more complex aspects of the noise modelling process. It was also pointed out that the electronic files were not referenced to Ordnance Survey co-ordinates making the data of very limited value for environmental assessment.

13. Second, in the proposal document (paragraph 5.7) and in Bristol Airport's letter dated 9 Feb 06 it was stated that climb gradients are typically 8.05%. In correspondence from Alan Saunders (Bristol Airport's noise consultant) it was claimed that contours were based on a typical climb gradient of 15%. Clarification was sought on climb gradients actually achieved and those used for noise modelling purposes.

14. Third, it was noted that the 2004 summer-day contours for Cardiff were very different from those supplied on 30 Nov 05 without any explanation.

15. The sponsor responded on 16 Mar 06 accepting that the runway had been plotted incorrectly on noise exposure contours for Bristol. It was also accepted that the electronic data had not been provided referenced to the Ordnance Survey National Grid. The sponsor claimed that there was a misunderstanding regarding climb gradients. It was stated that there was a difference between climb gradients for procedure design and environmental consideration. This subject will be addressed in more detail later in this report. The sponsor declared that the noise exposure contours for Cardiff presented on 30 Nov 05 were actually for 2001 and the most recently presented contours were for 2004. A CD-ROM with electronic data was included with a declaration that the information was correct and had been verified.

16. A meeting with representatives from Bristol International Airport, NATS and DAP staff was held at CAA House on 29 Mar 06. A sample printout of the sponsor's electronic data was presented to the meeting and it was demonstrated that the co-

ordinates in the printout were not referenced to the Ordnance Survey National Grid. The co-ordinates in the sample printout defined locations at sea in the south-west approaches to the United Kingdom. The change sponsor undertook to provide the required information by 30 Apr 06. ERCD undertook to complete its assessment by 30 May 06 provided that the sponsor provided the information required in the specified format by 30 Apr 06.

17. Further environmental information was provided by letter dated 19 Apr 06. It was found that the electronic data supplied were not referenced to Ordnance Survey National Grid. The letter included a table of climb gradients from the FAA INM model for the most frequently operating aircraft at the two airports. Seven out of the eight aircraft listed in the table were attributed with climb gradients from 15% to 17%. It was claimed that the climb gradients in the table matched those depicted in ERCD Report 0207 *Departure Noise Limits and Monitoring Arrangements at Heathrow, Gatwick and Stansted*. Climb gradients will be discussed in more detail later in the paper.

18. A response was sent to the sponsor on 27 April 06 explaining that the electronic data provided was not in a format that would allow assessment to commence.

19. The sponsor supplied more electronic data with a letter dated 11 May 06. The letter expressed disappointment that their assumed resolution of the climb gradient issue remained extant. The electronic data provided were in a format that permitted assessment although there remained some anomalies in data presentation. This has resulted in additional work for ERCD in recasting the data in a suitable format for analysis.

Inputs to noise modeling process

20. The sponsor makes the following statement about climb gradients in paragraph 5.7 of the proposal document:

> Climb gradients on all SIDs from Bristol Airport are typically 7.9% or 8.2% (average 8.05%). Climb gradients for Cardiff Airport are 8% and 8.2 % (average 8.1%).

21. The sponsor's noise consultant claims that contours were calculated on a typical climb gradient of 15%. The sponsor has stated that the default settings for the INM noise model were used in calculating noise contours. It is accepted that the default climb gradients[5] in INM for common types of aircraft operating at Bristol and Cardiff range from 15% to 17%. The INM climb profiles assume that aircraft use maximum thrust for take-off and climb profiles - airlines do not typically use maximum thrust because this increases engine maintenance costs. The INM User's Guide advises that users should 'make every effort to develop accurate average values for input data'. It goes on to state that users 'should examine the applicability of INM standard aircraft profiles to the airport under investigation'. It cautions that the aircraft profiles are 'generic and in some cases may not realistically represent flight operations at your airport ... and may be inappropriate'. It is possible to make adjustments to climb profiles within INM and the user guide explains this.

[5] From start of roll.

22. The sponsor has not submitted any data to indicate climb gradients achieved at the two airports. Although it is accepted that the default climb gradients in INM are theoretically possible at Bristol and Cardiff airports, it is considered unlikely that this will be the case. As previously stated the sponsor cited ERCD Report 0207 *Departure Noise Limits and Monitoring Arrangements at Heathrow, Gatwick and Stansted* in his letter dated 19 Apr 06 as evidence to support the claimed climb gradients of 15% to 17%. Figure 14 (Average heights of aircraft passing through each gate) of ERCD Report 0207 is attached at Appendix 1. The graph shows the average heights of different types of aircraft departing along routes at Heathrow, Gatwick and Stansted at gates[6] located close to 6.5 km from start of roll. A 15% climb gradient would result in an aircraft attaining 3,200 feet above aerodrome level at 6.5 km from start of roll. The graph shows that the average height for a Boeing 737-300 on LGW 08R at 6.5 km from start of roll is just less than 2,500 feet representing a climb gradient of 11.7%. The table provided by the sponsor showing INM standard climb gradients describes the Boeing 737-300 as achieving a climb gradient of 17%.

23. The sponsor further claims that there is a good correlation between noise levels at regional airports and the noise data described in ERCD Report 0207. No data was offered to support this assertion. It is surprising that Bristol Airport claims that the climb gradients for their aircraft are significantly steeper than those at the London airports but that the noise levels correlate well with noise data collected at the London airports. It is accepted that there may be complex interactions at work. For example, the additional thrust generated by the engines in achieving a higher climb profile results in greater noise at source but the noise level experienced at ground level is reduced because the distance between source and receiver is greater for higher climb gradients. This is a complex issue and outside the scope of this paper.

24. It is accepted that climb gradients will vary dependent on circumstances and this can be seen by the variation of climb gradients by routes shown in Figure 14 to ERCD Report 0207. However, the sponsor has not provided evidence to demonstrate that climb gradients at Bristol are significantly different from data collected during the course of production of ERCD Report 0207. The sponsor's assertions about climb gradients and noise levels cannot be accepted without supporting evidence.

Noise Exposure Contours

25. Notwithstanding the lack of clarity about climb gradients achieved at the airports, ERCD estimates that the noise exposure contours produced for Bristol and Cardiff Airports are broadly comparable with results that would be expected had climb gradients documented in ERCD Report 0207 been used. This does not mean that INM version 6.1 using the default settings will always produce results that will be comparable with those expected under more realistic assumptions. Indeed, in many cases INM version 6.1 will produce very different results to those estimated by ERCD. There are also other more technical differences between INM version 6.1 and modelling carried out by ERCD. These issues are being addressed in European and international guidance on aircraft noise modelling. Some of these more technical issues feature as improvements in the newly released INM version 6.2 and it is expected that they will be more fully addressed in INM version 7.0 of which the release date is not known.

[6] A gate is an artificial construct within a radar or track-keeping system that enables data about aircraft passing through the gate to be collected and analysed.

26. Tabular data for contours at Bristol and Cardiff airports was provided at Appendix A to the sponsor's letter dated 9 Feb 06. It appears that the figures in the table for number of dwellings within the contours are presented by decibel level band rather than as number of dwellings exposed to that level or higher i.e. the table row defined as 57 dBA includes dwellings exposed to noise levels between 57 dBA and 60 dBA. This assumption is made because the final row of the table contains the sum of individual dwellings which only makes sense if the data refer to contour bands. Under this assumption the data for 2004 existing routes are comparable with data presented for the same year in the master plan for each airport.

27. Tabular data presented for contour areas in Appendix A to the sponsor's letter dated 9 Feb 06 appears to be presented in a different format. If these data are presented by decibel band as described in the previous paragraph and indicated by the presence of a total row at the bottom of the table, then the total areas do not match those described in the master plans for either airport. For example, the area contour total for existing routes (2004) at Bristol is given as a total of 29.24 km^2 in the sponsor's table but the airport's master plan states a total of 13.1 km^2. Similarly, the area contour for existing routes (2004) at Cardiff is given as a total of 7.94 km^2 in the sponsor's table but the airport's master plan states a total of 3.9 km^2. Therefore, it is assumed that the contour area tables are presented cumulatively i.e. the area for 57 dBA includes the area for noise exposure levels of 57 dBA and above. It this assumption is correct then the total row of the bottom of the contour area tables has no meaning. It is not clear why the sponsor has presented the data for areas and dwellings in two different formats without explanation but the overall result is confusing.

28. The data presented demonstrate that the noise exposure contours for 57 dBA $L_{eq,\ 16\ hrs}$ and above will not increase as a result of the introduction of the airspace change. The contour area at Bristol is forecast to decrease by 2015. This is due to changes in the types of aircraft operating at the airport despite increases in passenger throughput and air transport movements. At Cardiff, the area of the 57 dBA $L_{eq,\ 16\ hrs}$ is forecast to approximately double and the population within those contours increases approximately five-fold by 2015.

29. The changes to noise exposure contours are attributable to growth and changes in air transport movements and the mix of aircraft rather than a direct consequence of the airspace change. However, it should be noted that the purpose of the airspace change, as noted in the introduction to the proposal document, is 'to ensure the continued safety of the increasing number of air transport movements'.

SEL Footprints

30. Tabular data for SEL footprints are provided at Appendix B to the sponsor's letter dated 9 Feb 06. Aircraft types have not been specified for the columns of each table. It is assumed that data for existing and proposed routes in the 2004 table refer to the Airbus A321. In the second table of this Appendix it is assumed that the columns marked 2015 contains data for the Boeing 767-300. It is noted that the sponsor has not provided area data relating to SEL footprints despite this being specifically required in DAP's letter dated 10 Jan 06. ERCD has calculated areas for SEL footprints based on the electronic data provided by the sponsor. It is not understood why the sponsor has produced two tables labelled 2004 traffic levels and 2015 traffic levels respectively. SEL footprints are

specific to a type of aircraft flying a given route on one particular occasion. The traffic levels at any given time have absolutely no bearing on the SEL footprint.

31. SEL footprints for the Airbus A321 indicate that the population exposed to 90 dBA SEL will be marginally reduced for easterly departures at Bristol and are unaffected for westerly departures at Bristol and all departures at Cardiff. Populations exposed to 80 dBA SEL are decreased on all departure routes at Bristol except one. The population within the 80 dBA SEL footprint for easterly departures from Bristol towards Brecon is reduced from 13,279 to 2,087 - a reduction of 11,192 people. There are reductions of three or four thousand people within the same footprints for westerly departures turning north and easterly departures towards Wotan. The one route with an increase in population within the 80 dBA SEL footprint is for westerly departures at Bristol towards Exmor. The reduction in population exposed to 80 dBA SEL or greater is due to the design of the standard instrument departure/ noise preferential route avoiding areas where the density of population is high. Turning points on the noise preferential routes will be based on ranges from DME rather than on reaching a specified height as hitherto. This will result in less variability in tracks flown over the ground as the turning point will be geographically fixed rather than being dependent on the performance characteristics of the aircraft flown as when using height as the criteria for the turning point.

32. Although there are substantial reductions in populations within most 80 dBA SEL footprints, there is some redistribution of the noise footprint and small numbers of the population may experience small increases in noise exposure. This is in accordance with Government policy[7] which encourages DAP to arrange routes to avoid densely populated areas as far as possible.

Population Counts

33. Population counts within 1.5 km of track centerlines were provided by the sponsor in his letter dated 30 Nov 05.

34. Population counts of current and proposed departure routes are subject to a number of methodological limitations. First, the areas considered for population counts are to some extent arbitrary. The 1.5 km width either side of the departure track defining the swathe has for many years been used at a number of UK airports as a threshold for compliance with noise preferential routes (NPR). This enables airports to measure and monitor track adherence. The width of the swathe is a function of the aircraft's ability to navigate accurately along the NPR track and has little relationship with noise impact experienced on the ground.

35. Second, not all individuals within the swathe are affected to the same extent. For example, a resident living 15 nm down track from the airport with aircraft operating at 7,000 feet will experience less impact than a resident at 5 nm from the airport with aircraft at 2,500 feet. However, the population count method considers both residents to be equivalent.

36. Third, the population count method takes no account of the usage patterns of particular routes. Because of the prevailing wind conditions westerly operations are

[7] DTLR (now DfT), Guidance to the Civil Aviation Authority on Environmental Objectives relating to the Exercise of its Air Navigation Functions, January 2002

generally more prevalent than easterly routes. In addition, the number of departures is not generally distributed evenly across routes departing from a particular runway. However, the population count makes no allowance for the frequency of use for particular routes.

37. It is assumed that the population count areas extend to the navigational reference points tabulated in Appendix B of the Bristol/Cardiff letter dated 30 Nov 05. If that is the case, aircraft departing along these routes are likely to be at a considerable height for the later portion of the route. For this reason, the sponsors have correctly pointed out that increases of population attributed to the portion of the routes over the towns of Bargoed, Blackwood, Magor and Caerwent are unlikely to be overflown by aircraft operating below 6,000 feet and most aircraft will be considerably higher. It should be noted that the same argument may well be applicable to those routes where a decrease in population overflown is claimed. Therefore, the apparent benefits may not be as significant as the sponsor claims.

38. It is also assumed that population counts for the separate routes have not been double counted in compiling the total figures in Appendix B. This is not explicitly stated in the covering letter but would account for the sums of counts for individual routes not matching the totals shown in the table.

39. The population count methodology is subject to the limitations previously discussed and must be used cautiously. This is especially the case when employed at distances from the airport typical in the table at Appendix B to the sponsor's letter dated 30 Nov 05.

Noise from Arriving Aircraft

40. The airspace change presents the opportunity for the introduction of continuous descent approaches (CDA) as the sponsor mentions briefly in the proposal and at greater length in his letter dated 9 Feb 06. The new airspace will result in aircraft operating at greater altitudes in the vicinity of Bristol and Bath irrespective of whether a CDA is achieved.

41. The possibility of more aircraft using a CDA on arrival offers the possibility for further benefits in terms of noise, fuel burn and emissions. However, it is not clear how the airports will ensure that aircraft carry out CDAs. Given the absence of measured data on current operations available to support this airspace change proposal, it is not clear whether the airport will know whether aircraft are complying with CDA procedures or not. It is considered that some form of monitoring and compliance should be established to assess whether the benefits from such procedures are being realised.

Conclusions

42. The implementation of the airspace change will have no significant impact to the size or shape of noise exposure contours above 57 dBA $L_{eq,\ 16\ hrs}$.

43. SEL footprints demonstrate that the noise preferential routes will have a significant effect on noise distribution. In general, the benefits are significant with thousands of people removed from the 80 dBA SEL footprint for each aircraft departure. There is a relatively small increase in population contained within the 80 dBA SEL footprint for one route.

44. In the airspace beyond the 80 dBA SEL footprints it would appear that the routes avoid densely populated areas as far as possible. To some extent this is shown by the population counts provided by the sponsor on 30 Nov 05. However, there is an element of subjectivity to this assessment as the population count method is subject to the limitations described and could not be relied upon as an objective, scientific test for environmental impact.

45. The inability of the sponsor to provide environmental information in an accurate, standard and consistent format, in accordance with the Government's environmental objectives for the CAA, has resulted in significant delays in assessing the environmental impact of this airspace change proposal.

[redacted]
Head of Environmental Research and Consultancy
Directorate of Airspace Policy
5 Jun 06

APPENDIX 1 AIRCRAFT CLIMB DATA FROM ERCD REPORT 0207

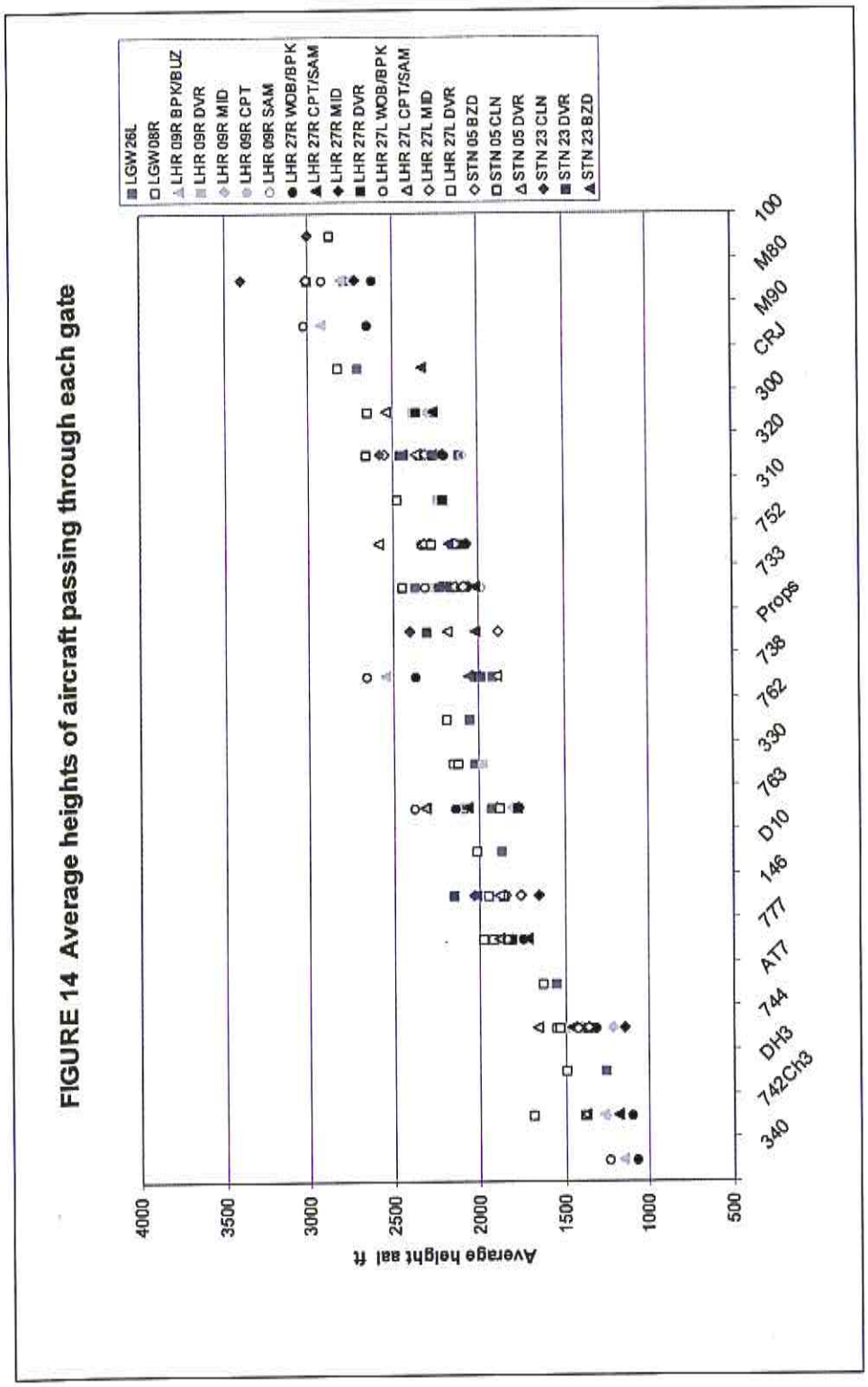


FIGURE 14 Average heights of aircraft passing through each gate

DIMENSIONS AND DESIGN OF FORTHCOMING CHANGES TO CLASS D CONTROLLED AIRSPACE IN THE VICINITY OF BRISTOL AND CARDIFF INTERNATIONAL AIRPORTS

Summary of Changes

A. A Class D CTR designated as Bristol CTR, an area enclosed by a circle radius 5 nm centred on 512258N 0024309W rising from the surface to FL105.

B. Introduction of a Class D CTA designated as Bristol CTA-1, rising from 1500 ft altitude to FL105 and bounded by the co-ordinates 512824N 0023142W thence clockwise by the arc of a circle radius 9 nm centred on 512258N 0024309W to 511826N 0023045W - 511759N 0024239W thence anti- clockwise by the arc of a circle radius 5 nm centred on 512258N 0024309W to 512757N 0024339W - 512824N 0023142W.

C. Introduction of a Class D CTA designated as Bristol CTA-2, rising from 1500 ft altitude to FL105 and bounded by the co-ordinates 512757N 0024339W thence anti-clockwise by the arc of a circle radius 5 nm centred on 512258N 0024309W to 511759N 0024239W - 511730N 0025433W thence clockwise by the arc of a circle radius 9 nm centred on 512258N 0024309W to 512728N 0025535W - 512757N 0024339W.

D. Introduction of a Class D CTA designated as Bristol CTA-3, rising from 2000 ft altitude to FL105 and bounded by the co-ordinates 512836N 0022614W thence clockwise by the arc of a circle radius 12 nm centred on 512258N 0024309W to 511838N 0022518W - 511826N 0023045W thence anti-clockwise by the arc of a circle radius 9 nm centred on 512258N 0024309W to 512824N 0023142W - 512836N 0022614W.

E. Introduction of a Class D CTA designated as Bristol CTA-4, rising from 2000 ft altitude to FL105 and bounded by the co-ordinates 512728N 0025535W thence anti-clockwise by the arc of a circle radius 9 nm centred on 512258N 0024309W to 511730N 0025433W - 511709N 0030302W - 512349N 0030302W - 512715N 0030058W - 512728N 0025535W.

F. Introduction of a Class D CTA designated as Bristol CTA-5, rising from 3000 ft altitude to FL105 and bounded by the co-ordinates 511826N 0023045W thence clockwise by the arc of a circle radius 9 nm centred on 512258N 0024309W to 511620N 0023328W - 511538N 0025120W - 511247N 0030302W - 511709N 0030302W - 511826N 0023045W.

G. Introduction of a Class D CTA designated as Bristol CTA-6, rising from 3500 ft altitude to FL105 and bounded by the co-ordinates 512847N 0022104W - thence clockwise by the arc of a circle radius 15 nm centred on 512258N 0024309W to 511849N 0022009W - 511838N 0022518W thence anti-clockwise by the arc of a circle radius 12 nm centred on 512258N 0024309W to 512836N 0022614W - 512847N 0022104W.

H. Introduction of a Class D CTA designated as Bristol CTA-7, rising from 4000 ft altitude to FL105 and bounded by the co-ordinates 513450N 0024206W - 513235N 0022204W - 512842N 0022338W - 512715N 0030058W - 513450N 0024206W.

I. Introduction of a Class D CTA designated as Bristol CTA-8, rising from 4500 ft altitude to FL105 and bounded by the co-ordinates 513235N 0022204W - 513107N

0020919W thence anti-clockwise by the arc of a circle radius 6 nm centred on 513027N 0015946W to 512841N 0020856W - 512320N 0021913W thence anti-clockwise by the arc of a circle radius 15 nm centred on 512258N 0024309W to 512847N 0022104W - 512842N 0022338W - 513235N 0022204W.

J. Introduction of a Class D CTA designated as Bristol CTA-9, rising from FL65 to FL105 and bounded by the co-ordinates 513107N 0020919W - 513039N 0020510W - 512841N 0020856W thence clockwise by the arc of a circle radius 6 nm centred on 513027N 0015946W to 513107N 0020919W.

K. A Class D CTR designated as Cardiff CTR, bounded by the co-ordinates 513021N 0032755W - 512957N 0032222W - 512815N 0031700W thence clockwise by the arc of a circle radius 5 nm centred on 512348N 0032036W to 511920N 0032411W - 512208N 0033305W thence clockwise by the arc of a circle radius 8 nm centred on 512348N 0032036W to 513021N 0032755W rising from the surface to FL105.

L. Introduction of a Class D CTA designated as Cardiff CTA-1, rising from 1000 ft altitude to FL105 and bounded 512815N 0031700W - 512526N 0030806W thence clockwise by the arc of a circle radius 8 nm centred on 512348N 0032036W to 511632N 0031518W - 511920N 0032411W thence anti-clockwise by the arc of a circle radius 5 nm centred on 512348N 0032036W to 512815N 0031700W.

M. Introduction of a Class D CTA designated as Cardiff CTA-2, rising from 1500 ft altitude to FL105 and bounded by the co-ordinates 512526N 0030806W - 512349N 0030302W thence clockwise by the arc of a circle radius 11 nm centred on 512348N 0032036W to 511455N 0031016W - 511632N 0031518W thence anti-clockwise by the arc of a circle radius 8 nm centred on 512348N 0032036W to 512526N 0030806W.

N. Introduction of a Class D CTA designated as Cardiff CTA-3, rising from 2000 ft altitude to FL105 and bounded by the co-ordinates 513309N 0033236W - 512957N 0032222W - 513021N 0032755W thence anti-clockwise by the arc of a circle radius 8 nm centred on 512348N 0032036W to 512208N 0033305W - 512413N 0033945W thence clockwise by the arc of a circle radius 12 nm centred on 512348N 0032036W to 513309N 0033236W.

O. Introduction of a Class D CTA designated as Cardiff CTA-4, rising from 3000 ft altitude to FL105 and bounded by the co-ordinates 513458N 0032522W - 512715N 0030058W - 512349N 0030302W - 513309N 0033236W - 513335N 0033205W - 513458N 0032522W..

P. Introduction of a Class D CTA designated as Cardiff CTA-5, rising from 3000 ft altitude to FL105 and bounded by the co-ordinates 512414N 0033945W - 511455N 0031017W thence anti-clockwise by the arc of a circle radius 11 nm centred on 512348N 0032036W to 512349N 0030302W - 511247N 0030302W - 511010N 0031341W - 511115N 0032929W - 511309N 0032910W - 512414N 0033945W.

Q. Introduction of a Class D CTA designated as Cardiff CTA-6, rising from 4000 ft altitude to FL105 and bounded by the co-ordinates 513946N 0032432W - 513839N 0031727W - 513450N 0024206W - 512715N 0030058W - 513458N 0032522W - 513335N 0033205W - 513946N 0032432W.

R. Introduction of a Class D CTA designated as Cardiff CTA-7, rising from 4500 ft altitude to FL65 and bounded by the co-ordinates 511115N 0032929W - 511010N 0031341W - 510512N 0031434W - 510617N 0033020W - 511115N 0032929W.

S. Introduction of a Class D CTA designated as Cardiff CTA-8, rising from 5500 ft altitude to FL75 and bounded by the co-ordinates 513950N 0030822W - 513947N 0024858W - 513450N 0024206W - 513743N 0030845W - 513950N 0030822W.

T. Standard Arrival Routes (STARs) to Terminal Holding Fixes at the BRI and CDF VORs will be introduced.

U. Standard Instrument Departure routes (SIDs) based upon both airports' Noise Preferential Routes will be introduced for routes via ALVIN, BADIM, BRECON, EXMOR and WOTAN.

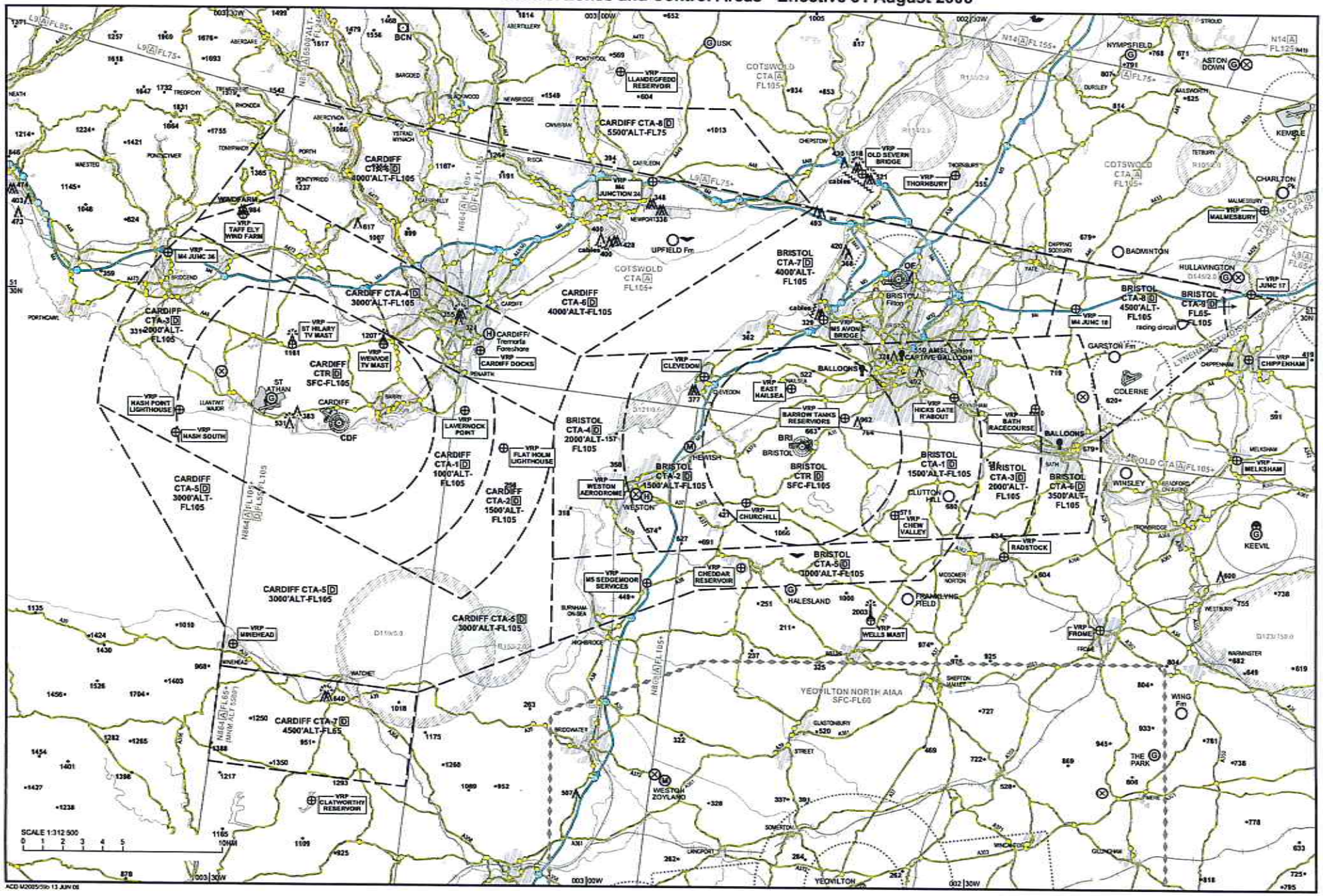
V. Yeovilton North and South Areas of Intense Aerial Activity (AIAAs) will be amalgamated to form a single Yeovilton AIAA, bounded by the co-ordinates 510900N 0030300W – 511200N 0025100W – 511200N 0021400W – 504400N 0021400W – 504400N 0030300W – 510900N 0030300W. Vertical Limits remain SFC to 6000 ft ALT. Peak activity is from 0830 to 1700 Mon to Thu and 0830 to 1600 Fri. Winter (Summer 1hr earlier). A LARS is available from Yeovilton ATC on 127.350 MHz. For aircraft in transit south of a line east to west through Dorchester, a LARS is available from Plymouth Military Radar on 124.150 MHz **but** to avoid interference pilots should contact Plymouth Military south of 511000N.

W. VRPs Bath, Portishead and Weston-Super-Mare will be disestablished. New VRPs for use by aerodrome and en-route traffic will be introduced as follows:

Clatworthy Reservoir	510423N 0032209W
Llandegfedd Reservoir	514130N 0025815W
Old Severn Bridge (M48 Junction 1)	513640N 0023837W
M4 Junction 24	513607N 0025532W
Taff Ely Wind Farm	513403N 0032816W
M4 Junction 18	513007N 0022100W
M5 Avon Bridge	512920N 0024135W
Bath Racecourse	512501N 0022415W
Weston Aerodrome	512016N 0025633W
M5 Sedgemoor Services	511608N 0025517W
Wells Mast	511413N 0023731W
Frome	511347N 0021913W

The Wells Mast is referred to as the Mendip mast at AIP ENR 5.4.1, however it is referred to by controllers and pilots alike in the local area as the 'Wells Mast'. This difference will be addressed by a note in EGGD AD2 2.22.

Bristol and Cardiff Control Zones and Control Areas - Effective 31 August 2006



GLOSSARY OF TERMS

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

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

Airspace Change Proposal Case Study Report

Title of Airspace Change Proposal	**BRISTOL & CARDIFF AIRSPACE CHANGE**
Sponsor	**BRISTOL & CARDIFF AIRPORTS**
DAP Project Leader	[redacted] **Terminal Airspace**
Case Study date(s)	**13/18/19 July 2005**

1.	Justification for change and "Option Analysis"	Yes/No	Comments
1.1	Is the explanation of the proposed change clear and understood?	**Yes**	The proposed change seeks to: ♦ Amend current CAS arrangements in order to enhance safety and efficiency of operations and to better accommodate current ac types serving both airports. ♦ Establish CAS contiguous with adjacent en-route system to facilitate use of SIDs and STARs. ♦ Create a known traffic environment whilst continuing to facilitate use of the airspace by adjacent airspace users and transit aircraft of all types through the use of Class D airspace.
1.2	Are the reasons for the change stated and acceptable?	**Yes**	See above. That said, having described how historically the current airspace arrangements were deemed satisfactory (in terms of types of aircraft operating to and from both locations and their performance levels) the sponsors fail to describe adequately the shortcomings of current airspace arrangements with regards to current types. In this and other minor respects the sponsor appears to be relying upon the March 2003 proposal as providing the detailed justification for the change; unfortunately this deals with Bristol's requirements only.
1.3	Have all appropriate alternative options been considered, including the 'do nothing' option?	**Yes**	Other than 'Do nothing' (considered to be unacceptable), the only other option considered was to proceed with standalone Bristol change proposal drawn up in 2003 that took no account of

			emerging (now current) JFADT 'West End' project, neither were Cardiff's CAS requirements taken into account. Amendment of the Bristol CTA and establishment of SIDs and STARs to both airports considered essential by sponsor; the shape of CTA sectors has been determined by these, hence little scope for variation in CAS design.
1.4	Is the justification for the selection of the proposed option sound and acceptable?	**Yes**	See 1.1 and 11.3. Design is considered by the sponsor as being the best means of satisfying safety and efficiency considerations whilst still accommodating non-Bristol/Cardiff traffic.

2.	**Airspace Description and Operational Arrangements**	**Yes/No**	**Comments**
2.1	Is the type of proposed airspace clearly stated and understood?	**Yes**	Clearly stated in both airspace classification (Class D as per current CTRs/CTAs at both airports) and structural terms.
2.2	Are the hours of operation of the airspace and any seasonal variations stated and acceptable?	**Yes**	No change to current H24 service provision. Consideration needs to be given to require Cardiff to resource for 24-hour radar service provision and delegated ATS task (N864).
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**	Connectivity with the adjacent en-route structure is sought by the proposal. SID and STAR proposals are described in the submission; these have been supplemented by a detailed design report. The Case Study noted minor deficiencies in the conventional SID design proposals that were addressed in part through clarification questions and will be resolved during subsequent proposal refinement. The change sponsor had negotiated SID proposal development when developing procedures. Inter-unit agreements on procedures will need to be reflected in the design as implemented. RNAV SID proposals will require closer scrutiny and refinement, not least regarding available navaid coverage. The Case Study considered this aspect of the proposal to be weak; indeed supporting material within the submission suggests there is insufficient (or at best marginal) suitable navaid coverage to support the proposed RNAV SIDs; this is borne out by S&S study into coverage and

			availability. That said, the proposal should not be rejected on account of RNAV deficiencies; instead, the approved airspace should be such that P-RNAV SIDs ~~could~~ be established at a later date without recourse to further airspace changes. See also 3.1 below. There are no adjacent States or High Seas airspace issues associated with this proposal.
2.4	Is the supporting statistical evidence relevant and acceptable?	**Yes**	That provided (ATM and Term Pax data) has been validated by analysis of CAA-held data. Broad statistical data concerning numbers and types of aircraft operating along certain proposed SIDs and STARs were provided as part of the response to clarification questions.
2.5	Is the analysis of the impact of the traffic mix on complexity and workload of operations complete and satisfactory?	**Yes**	However, as with 2.4, some analysis of numbers and types of aircraft operating within certain elements of the proposed arrangements would have enhanced the stated cases for the proposed airspace.
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 (ATSD) and airspace management requirements?	**Yes**	Draft LOAs were not included, however the synopses of each proposed LOA included in the proposal were considered sufficient for the purposes of the Case Study. That said, copies of draft LOAs as they currently stand have been requested and the change sponsor has undertaken to provide these. The LOAs serve to satisfy FUA requirements placed upon the change sponsor by adjacent airspace users. ATSD Central Region has noted that, given the number of agreements being drafted, the sponsor needs to determine the risk of each of the proposed LOAs being invoked simultaneously and the resultant impact upon Bristol operations in particular this would have. The change sponsor does not consider it necessary to develop a 'hierarchy' of LOAs; instead the two ATC units will undertake to develop procedures to manage the impact of multiple LOA activation.
2.7	Should there be any other aviation activity (low flying, gliding, parachuting, microlight site etc) in the vicinity of	**N/A**	There are no conflicting aviation activities awaiting resolution.

	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?		
2.8	Is the evidence that the Airspace Design is compliant with ICAO SARPs, Airspace Design & FUA regulations, and Eurocontrol Guidance satisfactory?	**Yes**	The case Study noted that proposed Bristol 'CTA-1' (base 1500 ft amsl) was compliant with ICAO Annex 11 design requirements (and is essentially revised versions of two extant CTAs). In response to a clarification question, the change sponsor has provided information on the use of the Class G airspace beneath the CTA and acceptable reasons why it should remain in place rather than by absorbing all or part of the airspace by means of an expanded CTR. Microlight activity to the west of the CTR will remain below the CTA and be subject to an LOA.
2.9	Is the proposed airspace classification stated and justification for that classification acceptable?	**Yes**	Class D airspace. See Serials 1.1, 1.3, 1.4 and 2.1 above.
2.10	Within the constraints of safety and efficiency, does the airspace classification permit access to as many classes of user as practicable?	**Yes**	See Serials 1.1, 1.3, 1.4, 2.1 and 2.7 above.
2.11	Is there assurance, as far as practicable, against unauthorised incursions? (This is usually done through the classification and promulgation)	**Yes**	This will be achieved through the airspace classification.
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**	Through a commitment by both units to the continuation of current service provision (eg LARS). In addition, should the proposal be implemented, both units would be obliged to maintain records of CAS transits and refusals of service that would be subject to scrutiny under developing DAP compliance monitoring procedures. There will be no change to Filton's LARS obligations.
2.13	Are appropriate arrangements for transiting aircraft in place in accordance with stated commitments?	**Yes**	Through a commitment by both units to the continuation of current service provision (eg LARS). In addition, there will be no change to Filton's LARS obligations.
2.14	Are any airspace user group's requirements not met?	**No**	AOPA, HCGB and 'Light Airlines' (all NATMAC members) each queried the volume of airspace being sought. AOPA and HCGB

			also raised concerns about future VFR charging regimes and VFR access. The sponsor considered these 'objections in principle'. Their responses to Regulatory Consultation will be carefully scrutinised. BHPA did not respond to consultation material, however the views of adjacent hang gliding and parascending organisations were obtained by the sponsor.
2.15	Is any delegation of ATS justified and acceptable? (If yes, refer to Delegated ATS Procedure).	**N/A**	The proposal does not envisage any changes to the delegated ATS functions undertaken on behalf of NERL by Cardiff or Bristol. There is no intention for either unit to delegate tasks to others. The status of N864 within the proposed airspace warrants clarification in airspace classification, NATS licence and contingency terms.
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?	**Yes**	As proposed, yes. Justification and requirement for two proposed Cardiff CTA sectors was queried at the Case Study meeting, however additional justification has been provided and accepted as valid. That said, should the proposal be implemented, the Change Sponsor should be charged with recording uptake of the areas and their use subject to scrutiny at the post-implementation review.
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).	**N/A**	There are no buffer requirements. The 'buffer' referred to in consultation document facilitates inter-unit co-ordination and is not a buffer within the meaning of the Buffer Policy letter.
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**	The design is predicated principally upon containment of procedure 'primary area', however in places containment is by nominal track plus a minimum of 2 miles in order to better satisfy the 'minimum airspace' requirement and accommodate the requirements of adjacent airspace users.
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?	**Yes**	All procedures are designed in accordance with ICAO Doc 8168 PANS-OPS.
2.20	If the new structure lies close to another airspace structure	**Yes**	The sponsors have participated in planning meetings with NATS

	or overlaps an associated airspace structure, have appropriate operating arrangements been agreed?		(through West End project development) and participated in airspace simulations associated with that project. The sponsor is aware of the need to draft appropriate operating arrangements.
2.21	Where terminal and en-route structures adjoin, is the effective integration of departure and arrival routes achieved?	**Yes**	In the case of STARs, yes. Proposed SIDs as defined end at Transition Altitude (to be 6000 ft in accordance with DAP policy) and as such (with the exception of Cardiff EXMOR SIDs) may not guarantee connectivity in certain circumstances – particularly if departing aircraft experience comms failure. Refinement of the SID proposals is ongoing.

3.	Supporting Resources and CNS Infrastructure	Yes/No	Comments
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?	**Yes**	No change to area of responsibility, therefore no change to communications requirements other than the addition of a UHF frequency at Bristol. It is not clear whether the sponsor has approached Defence Spectrum Management for a UHF frequency; this will be addressed in a clarification question.
	▪ **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 eg. a DEMETER report, and if so, is it satisfactory?	**No**	Other than those to BCN, conventional SIDs are reliant upon extant NDBs at both airports and a less than optimum use of DR navigation. DEMETER-derived evidence submitted in support of the proposal indicates inadequate navaid coverage below 3000 ft for proposed RNAV SIDs (with coverage improving with height). This is borne out by data provided by S&S. Clarification on RNAV navaid requirements and availability will be sought.
	▪ **Surveillance:** Radar Provision – have radar diagrams been provided, and do they show that the ATS route / airspace structure can be supported?	**N/A**	Not required in that service area does not change. However, some indication of both airport's radar cover will be sought from the sponsor to validate claims concerning radar cover within the context of contingency planning.
3.2	Where appropriate, are there any indications of the resources to be applied, or a commitment to provide them,	**Yes**	Bristol's commitment to installing a UHF frequency is clear, however it is felt that additional resources are required in order to

	in line with current forecast traffic growth acceptable?		guarantee redundancy in both normal and exceptional circumstances. Resourcing is an issue that has been raised by by several consultees seeking assurances that the promises to guarantee access through the airspace to all airspace user are robust. Concern is justified to some extent, especially when one considers, for example, the potential adverse impact upon Colerne operations should Bristol be obliged to assume certain Cardiff tasks as is suggested. In its response to a clarification question the sponsor has given assurances that this will not be the case. Since control of N864 will now continue to revert to LACC, who will additionally retain current contingency responsibilities for each of the delegated ATS functions undertaken by Bristol and Cardiff, this specific concern is of less significance. NATS Cardiff aspires to increase its ATCO strength and is engaged in negotiations with its parent company to increase its establishemnt. No indication of when this will be realised has been given.

4.	Maps/Charts/Diagrams	Yes/No	Comments
4.1	Is a diagram of the proposed airspace included in the proposal, clearly showing the dimensions and WGS84 co-ordinates?	Yes	The quality of the supporting maps is commendable. Although the nomenclature of the various CTA sectors was not precisely in keeping with charting convention, it was clearly understood and consistent throughout the submission.
4.2	Do the charts clearly indicate the proposed airspace change?	Yes	See comment above.
4.3	Has the Sponsor identified AIP pages affected by the Change Proposal and provided a draft amendment?	Yes	The sponsor has identified some of the necessary amendments and has been informed of the wider-ranging nature of the amendments that will be required should implementation of the proposal be approved. Work will be undertaken during 'Regulatory Consultation' to ensure that all of the required amendments are identified and drafted.

5.	Operational Impact	Yes/No	Comments
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.	**Partially**	Not unsurprisingly the sponsor is of the opinion that the impact of the change upon non-Bristol/Cardiff airspace users can be adequately mitigated by continuing to maintain the current degree of service provision to airspace users in the local area. The Sponsor does not appear to have taken into consideration the potential adverse impact upon, for example, Colerne operations should Bristol assume certain Cardiff tasks under proposed contingency arrangements at the expense of certain of its own tasks (eg services to VFR transits, suspension of LOAs). In such circumstances Colerne operations could not continue to the extent agreed upon in a draft LOA, partly upon which MOD acceptance of the proposal is accepted. It is unclear whether Bristol has considered handing the Colerne task back to Lyneham under these circumstances (and indeed whether MOD have themselves identified the impact). This will be raised as a clarification issue. Other than providing a UHF frequency at Bristol, the sponsor believes it is adequately resourced to undertake its various tasks should the proposal be implemented. A number of consultees - not least MOD – raise doubts about the level of resourcing at both units, particularly Bristol. There is perhaps some justification in this, especially during peak traffic periods (and the St Athan-based UAS has provided some indication of the adverse impact upon training 'busy' UHF periods can have). Consideration should therefore be given to making implementation (assuming it is approved) conditional upon the sponsors undertaking to enhance resources (eg ability to split LARS task) in the light of any refusals of service deemed attributable to lack of resources. See also comment at Serial 3.2 above concerning Cardiff. SIDs and STARs are not currently established within the proposed airspace. Details of proposed SIDs and STARs are contained within the proposal.

			There do not appear to be any flight planning restrictions or route requirements arising from the proposal.
5.2	Does the Sponsor Consultation letter reflect the likely operational impact of the change?	**Yes**	In outline terms only, as is customary in these cases. Detailed discussions have been held with both aviation and non-aviation consultees alike where it has been proved to be necessary.

6.	Environmental Impact	Yes/No	Comments
6.1	Are the Sponsor's Environmental Impact Assessments and Statements complete and satisfactory?	**Yes**	They are considered broadly acceptable to ERCD, however much of the supporting evidence was considered simplistic. Further detail will be sought during Regulatory Consultation, especially in regard to population counts and imbalances in emphasis in the way environmental claims have been made (eg not the same degree of detail for Bristol in some cases, not the same degree for Cardiff in others).
6.2	Is evidence of environmental consultation provided? This should include a list of those local authorities and interested bodies consulted and a map showing affected local authorities, National Parks, AONB, etc. (Check against local government guide – copy held by TA, referred to in CAP725 – and local government boundary maps held by AC&D).	**Yes**	The sponsor has consulted with the appropriate local authorities and non-Governmental organisations affected by the proposal.
6.3	Has the sponsor taken account of the results of the environmental consultation or provided evidence to indicate why this has not been possible?	**Yes**	All bar three of the environmental objections were withdrawn following further correspondence and meetings between the sponsor and the consultees concerned. This activity did not lead to changes in the proposal, rather the activity led to a better understanding and an acceptance of what the proposal seeks to achieve. The sponsor's opinion that the three outstanding objections were 'objections in principle' was upheld by the case Study. A fourth objected on the basis of a series hypothetical safety threats to a local power station.
6.4	Does the Sponsor Consultation letter reflect the likely environmental impact of the change? The letter should be in an easily understood format.	**Yes**	But only in outline terms. However, a very clear map showing existing and proposed arrival and departure routes was included as part of the consultation package. Further, more detailed,

			correspondence passed between the sponsor and environmental consultees. Meetings were held in a number of cases.
6.5	Where appropriate, are noise contour/footprint charts included and the information satisfactorily presented?	**No**	Further evidence to support claims concerning the environmental benefits of the proposed amendments to the Bristol NPRs was provided as the clarification question response, although charts were not provided. The narrative is considered acceptable pending provision of charts. These will be sought during regulatory consultation.

7.	Economic Impact	Yes/No	Comments
7.1	Is a provisional economic impact assessment to all categories of operations and users likely to be affected by the change included and acceptable?	**Yes**	A superficial assessment identifies the cost benefits to aircraft operators using the airports (principally the airlines), and acknowledges that there may be an adverse impact upon airspace users electing to avoid the proposed airspace rather than seek a crossing service. Adequate provision of crossing services will mitigate against this impact.

8.	Consultation Process	Yes/No	Comments
8.1	Is the following information complete and satisfactory?		
	▪ A copy of the original proposal upon which consultation was conducted.	**Yes**	Consultation material was made available in English and Welsh language versions. In both cases the sponsor included an SAE and a response form to encourage returns.
	▪ A copy of all correspondence sent by the sponsor to consultees during consultation.	**Yes**	The sponsor has provided supporting consultation correspondence, and a summary record of consultation actions forms part of the submission. Unfortunately the benefit of this is undermined somewhat through the well-intentioned but nevertheless convoluted (and in places inconsistent) 'bundling' of correspondence by consultee 'types'. This has hampered speedy assessment of the evidence.
	▪ A copy of all correspondence received by the sponsor from consultees during consultation.	**Yes**	
	▪ A referenced tabular summary record of consultation actions.	**Yes**	
	▪ Details of and reasons for any changes to the original proposal as a result of the consultation.	**Yes**	Details of how and why the proposal evolved during consultation – and the associated consultation the sponsor was required to
	▪ Details of further consultation conducted on any	**Yes**	

	revised proposal.		undertake - is provided.
8.2	Were reasonable steps taken to ensure all necessary consultees actually received the information eg. Postal/e-mail/meeting fora?	**Yes**	SAEs accompanied the consultation packs. Hastening letters were sent where required (for example, in the case of a number of local authorities, two hastening letters/reminders were sent). In addition, a number of responses were hastened by telephone calls and e-mails.
8.3	What % of all operational consultees replied? (Include actual numbers).	**72%**	81 out of 112.
8.4	What % of all environmental consultees replied? (Include actual numbers).	**66%**	146 out of 221.
8.5	Were reasonable steps taken to ensure as much substantive feedback was obtained from the consultees eg. Through follow-up letters/phonecalls?	**Yes**	See Serial 8.2 above. Summarised in part in the proposal, detailed evidence provided through supporting consultation correspondence.
8.6	Have all objections to the change proposal been resolved (or sufficiently mitigated)?	**Yes**	Of 26 objections, all but 7 were resolved. Of these, the Case Study considered that the three outstanding aviation objections and the four non-aviation objections were considered to be 'objections in principle', unrelated to the specifics of the proposal, and were not upheld.

Case Study Conclusions – To be completed by Project Leader		
	Yes/No	**Comments**
Has the Sponsor met the DAP Airspace Change Proposal requirements and Airspace Regulatory requirements above?	**Yes**	Clarification was required on a number of issues (see summary in following section) and the appropriate questions were submitted to the change sponsor on 5 August. The sponsor met the deadline for responses and, while some detail is still lacking and will be sought during regulatory consultation, the responses were considered to be adequate.

Outstanding Issues		
Serial	**Issue**	**Action Required**
1	**Resourcing**	Cardiff to continue to seek additional resources to permit 24-hour radar service provision and delegated ATS

		task (N864); progress in this should be monitored. LACC's retention of 'out of hours' and contingency responsibilities for delegated ATS functions resolves this issue to a considerable extent. Additional resources may be required at Bristol in order to guarantee sufficient capacity and redundancy in both normal and exceptional circumstances.
2	**SIDs and STARs**	Minor deficiencies in the conventional SID design proposals. Connectivity does not appear to be achieved. RNAV SID proposals require closer scrutiny and refinement, not least regarding available navaid coverage.
3	**LOAs**	Draft LOAs to be provided by the change sponsor.
4	**Airspace Design**	The sponsors have now provided sufficient justification for Cardiff 'CTA-6' and 'CTA-8'. Should the proposal be implemented, the Change Sponsor should be charged with recording uptake of the areas and their use subject to scrutiny at the post-implementation review.
5	**Operational impact**	The status of N864 within the proposed airspace has been resolved. The impact of Bristol's assumption of certain Cardiff tasks in contingency circumstances is reduced as a consequence.
6	**Environmental Impact**	Additional detail to support a number of environmental impact claims remains outstanding and will be sought during regulatory consultation..
The above plus a number of minor issues will be addressed by clarification questions.		

Additional Compliance Requirements (to be satisfied by Sponsor)	
Serial	**Requirement**
1	Nil

Recommendations		
	Yes/No	**Comments**
Is the Proposal recommended to proceed to formal Regulatory Consultation? If so, is it required to go beyond NATMAC?	**Yes**	Regulatory Consultation does not need to go beyond NATMAC.
Does the proposal require a Consultative Letter?	**Yes**	
Does the proposal require an Informative Letter?	**No**	
Is the approval of the SoS for Transport required in respect of the Environmental Impact of the airspace change?	**No**	
Is the approval of the MOD required in respect of National Security issues surrounding the airspace change?	**No**	

General Summary Comment and Observations

General Summary:

An attractive package that is superficial in places and marred by a well-intentioned but convoluted means of presenting supporting consultation correspondence. Subject to the various clarification issues that have been identified and a successful outcome to Regulatory Consultation, it is recommended that the proposal be implemented at AIRAC 3/2006. It should not, however, be implemented before the West End change in the event of the implementation of that proposal being delayed.

Observations:

The current requirement to review revised airspace arrangements 6-12 months after their implementation should be reconsidered. Such a short time period (at least within the terminal airspace context) does not allow change sponsors to assess the full impact of seasonal traffic variations upon the revised arrangements and vice versa. Therefore it is recommended that reviews be conducted 9-12 months after implementation.

Case Study Sign-off/Approvals

	Name	Signature	Date
Case Study Record completed by (Project Leader)	[redacted]	[redacted]	19 September 2005
Case Study Record approved by (DAP Section Manager) I have discussed the recommendations with [redacted] and endorse his proposals.	[redacted]	[redacted]	19 September 2005
Case Study Conclusions approved by (AD1) I have had some of the answers elaborated to give a clearer view of what has been discussed/agreed. I am content that this should proceed to regulatory consultation. We may need to address the resource issue at Bristol as part of the approval - DAP are liaising with the Regional Inspector to establish the facts. It would be inappropriate to proceed to implementation until the answers to the supplementary questions have been provided.	[redacted]	[redacted]	20 September 2005

DAP Comment/Approval

Regulation consultation can proceed. Additional matters identified in F33 to be resolved before Notification.

Name	Signature	Date
[redacted]	[redacted]	27 Sep 05