

**AIRSPACE CHANGE PROPOSAL - OPERATIONAL REPORT: ROYAL AIR FORCE SPADEADAM PROPOSAL ON BEHALF OF DET NORSKE VERITAS-GERMANISCHER LLOYD (DNV GL) FOR A STANDALONE DANGER AREA (DESIGNATION EG D510C)**

**References**

1. Civil Aviation Publication (CAP) 725: Airspace Change Proposal
2. CAP 740: UK Airspace Management Policy
3. No 1 AIDU Flight Information Publication En-Route Supplement: British Isles and North Atlantic; Pg. 140

**Annexes**

- A. Current Letter of Agreement between Berry Hill Operations, Royal Air Force Spadeadam and GL Industrial Services UK Ltd
- B. Supporting maps, charts and diagrams
- C. Draft Letter of Agreement between Berry Hill Operations, Royal Air Force Spadeadam and GL Industrial Services UK Ltd
- D. RAF Spadeadam Safety Assessment of Change of Procedure 17/01: DNV GL Procedures
- E. Draft AIP entry for EG D510C
- F. EG D510C NOTAM Example

**Date: 28 February 2018**

**Background**

**RAF Spadeadam**

1. RAF Spadeadam is an Electronic Warfare Threat Training Facility (EWTTTF) which is established to provide operationally-representative Electronic Warfare (EW) training and trials facilities to UK and NATO aircrew.
2. The EWTTTF is bounded by a Danger Area complex, EG D510 and D510A, which is established to provide enhanced safety to range users conducting high-energy, and often low-level evasive manoeuvres against Radio Frequency (RF) Threats on the range, from surface to 5,500' AMSL (occasionally to 18,000' AMSL by NOTAM).
3. EG D510/A are activated routinely in accordance with AIP timings; Mon-Thu 0800hrs – 1700hrs (local), Fri 0800hrs – 1600hrs (local). At all other times, EG D510/A are activated via NOTAM.

**DNV GL**

4. Det Norsk Veritas-Germanischer Lloyd (DNV GL) provides technical advice to the global oil and gas industry. The company offers assurance and advisory services in risk management to enable safe, reliable and enhanced performance in projects and operations.
5. DNV GL carries out research and technical service work at RAF Spadeadam, at specific fixed sites within EG D510. Specifically, DNV GL conducts explosive testing, which is required to be coordinated against any air activity in the area.

**Current Procedures**

6. Full details of the current procedure are outlined at Annex A. A précis is below:

ACP Op Report: RAF Spadeadam; DNV GL DA (EGD510C Desig.)

7. **Routine Operations**

- a. DNV GL explosive testing is routinely coordinated and approved, denied or delayed by the RAF Spadeadam Duty Air Traffic Control Officer (DATCO), who holds authority to de-conflict such testing with range air operations either laterally or by time delay.
- b. EWTTTF range air activity takes precedence over DNV GL operations, however, the DATCO can tactically consult with aircrew, who if willing to avoid the DNV GL test site laterally may agree to concurrent activity taking place.
- c. The RAF Spadeadam Flight Operations Assistant tannoys a station-wide broadcast to notify personnel that an explosives test is imminent.

8. **DNV GL Explosion Categories.**

- a. **Category 1.** No physical effect<sup>1</sup> outside of the DNV GL fence line to a height of 20m.
- b. **Category 2.** Physical effect to a maximum of 100m from the DNV GL fence line to a height of 150m.
- c. **Category 3.** Physical effect to a maximum of 300m from the DNV GL fence line to a height of 400m.
- d. **Category 4.** Physical effect to between 300m and 800m from the DNV GL fence line to a height between 400m and 1000m.
- e. **Category 5.** Physical effect to between 800m and 1300m from the DNV GL fence line to a height of between 1000m and 1300m.
- f. **Greater than Category 5.** Occasionally (typically once every 18-24 months), an explosive test will fall outside of the Category 5 lateral and/or vertical parameters outlined above. Such testing does not exceed a physical effect beyond 3000m from the DNV GL fence line to a height not above 2500m. When such testing is planned, EG D510 will be activated to provide lateral protection, and/or the airspace raised by NOTAM to an altitude not exceeding 18,000' AMSL, as necessary.

9. **Extended/Out Of Hours Operations**

- a. On occasion when DNV GL require testing to take place when the EWTTTF is not active for air operations, RAF Spadeadam ATC staff are required to raise a No Danger Area Crossing Service (DACS) NOTAM in advance to activate or extend EG D510 to provide a safe means of segregating DNV GL explosive testing from General Aviation (GA) operating in the area.
- b. DNV GL will notify the RAF Spadeadam Main Guard Room of an imminent explosives test. Whilst there is no range air activity, no negotiation is required, and DNV GL activity takes precedence. No DACS is available.
- c. The RAF Spadeadam Military Provost Guard Service (MPGS) tannoys a station-wide broadcast to notify personnel that an explosives test is imminent.

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<sup>1</sup> Physical effect will include blast to 15mbar and fragmentation.

## Justification for Change

10. The activation of EG D510 for DNV GL explosive testing when there is no EWTTTF requirement for the airspace is the safest means of segregating activity utilising the current airspace construct. However, it presents the following major issues:

- a. It utilises a disproportionate amount of airspace to that required to conduct the routine task.
- b. It presents a significant obstacle and potential delay in response times for the Great North Air Ambulance and airborne police assets operating in the Cumbria-Northumberland-Scottish Borders area.
- c. It presents a significant obstacle to local GA, including NDB traffic inbound to Carlisle Airport runway 25.

## Analysis of Change Options

11. **Option 1: No Change.** Continuing with the status quo, although the safest means of segregating DNV GL activity with the current airspace construct, severely impedes the movement of GA and emergency services air systems. Specifically:

- a. Forcing NW/SE transiting GA into a narrow corridor of airspace (approx.. 5nms) between EG D510 and the Otterburn DA complex, EG D512/A. See Annex B Fig. 6.
- b. No DACS available when RAF Spadeadam ATC not manned. No access to EG D510/A by GA, emergency air systems, or those who require access for their operations (i.e. pipeline/powerline inspections). This either prevents such activity from occurring, or adds significant distance to air systems unable to climb above the active DA.
  - 1) The direct line north to south across EG D510 is circa 13nms. Routing around the range, the distance increases to circa 35nms.
- c. Airspace infringements cannot be policed when RAF Spadeadam ATC staff are not on duty. Air systems navigating west/east between Newcastle International Airport and Carlisle Airport routinely follow the A69, which runs parallel to the southern boundary of EG D510. Additionally, air systems conducting an NDB approach to runway 25 at Carlisle come into very close proximity to the range boundary. High winds or navigational error could easily see such traffic stray into the DA when explosive testing is in progress.

12. **Option 2: Establish EG D510C and re-designate EG D510 to EG D510B.**

- a. **EG D510C.** It is proposed that DNV GL have a standalone segment within the EG D510 DA complex (designation EG D510C) established to conduct explosive testing activity outside of EWTTTF times. The proposed dimensions are:
  - 1) Lateral: A circle with a radius of 1.5nm radius centred on 55.045286N - 2.5906491W (DMS 55 02 43N 02 35 26W). See Annex B Fig. 1-4.
  - 2) Vertical: From surface to an upper altitude not exceeding 18,000' AMSL.

b. **Containment of explosive testing.** To enable DNV GL to conduct explosive testing within the RAF Spadeadam range, the MOD is satisfied that all hazardous activity will be contained within the proposed new segment of airspace, or will be facilitated iaw Para 8.f. above.

c. **Re-designation of EG D510 to EG D510B.** It is understood that a review of the UK danger area naming convention is underway, and to bring RAF Spadeadam's airspace into line, the following changes to airspace designations shall be made as part of this ACP:

- 1) EG D510 will be re-designated EG D510B.
- 2) EG D510A will remain as currently designated.
- 3) The newly established segment will be designated EG D510C.

13. **Recommendation.** It is recommended that Option 2 is adopted, providing DNV GL with a dedicated DA segment established to provide them with autonomy of operations when RAF Spadeadam is not manned, and to improve airspace efficiency in the region. In addition, the re-designation of EG D510 to EG D510B will bring the Spadeadam DA complex into line with the new airspace naming convention. Although the CAA has agreed that no formal consultation is required in this instance, the proposal of Option 2 has been met with enthusiastic support from SATCOs at both Newcastle and Carlisle Airports.

#### **Airspace Description**

14. **Airspace Structure.** The subject airspace is within Class G airspace, and would not require a change of airspace classification. The area is also within danger area EG D510, which is segregated for RAF Spadeadam EWTTT range traffic, when activated. The proposed dimensions of the airspace are outlined at Para. 10 above.

15. **Hours of Operation.** Routinely EG D510C would be activated for explosive testing 0800-1900Z Mon-Fri (0700-1800Z Summer); 0900-1600Z Sat (0800-1500Z Summer). Occasionally activity on Sunday by NOTAM. When EG D510B airspace is activated for EWTTT activity, EG D510C will also be activated and DACS provided via RAF Spadeadam ATC.

16. **Interaction with En-route Structures .** The proposed danger area sits within Class G airspace. Routinely, commercial flights to/from Newcastle International Airport transiting to/from airports in Eire/Northern Ireland transit the area to join/leave the airway structure in the vicinity of Deans Cross (DCS). Usually such flights route approximately 10nms south of EG D510/A climbing/descending through 10-15,000'.

17. **Airspace Buffer.** When EG D510C is activated in isolation, UAA will not be permitted. Therefore a safety buffer would not need to be applied.

18. **Traffic Data.** Due to the nature of this proposal, i.e. reducing the size of the area normally activated, it is not possible to predict what traffic might use the additional airspace that has been made available.

19. **Impact upon Operational Complexity.** The proposed change would reduce the operational complexity for emergency services air assets (Great North Air Ambulance, Cumbria/Northumbria Police Air Support Units), in addition to increasing the available non-segregated Class G airspace to ATM operators at Carlisle and Newcastle Airports.

20. **Draft Letter of Agreement.** The current Letter of Agreement between RAF Spadeadam and DNV GL is at Annex A. It will be replaced by the Letter of Agreement at Annex C.
21. **Compliance with ICAO SARPs and UK Policy.** The proposal is supportive of CAP 740, UK Airspace Management Policy, as it centres upon changing current inefficiencies in segregating a disproportionate amount of airspace than that required for the DNV GL task, whilst ensuring such activity is still conducted safely.
22. **Airspace Classification.** Class G; segregated as a Danger Area when active.
23. **Airspace Access.** The proposal provides equitable access to the remainder of the EG D510 DA Complex to all users when EG D510C is activated in isolation. Under the current procedure, EGD510 is activated with No DACS, prohibiting access to the airspace when RAF Spadeadam ATM staff are not on duty. DACS is not delegated; a DAAIS is available from Newcastle and Carlisle ATM.
24. **Delegation of ATS.** Not applicable.

### **Supporting Infrastructure and Resources**

25. The current EG D510/A complex is already supported by a full suite of ATM surveillance and communications equipment and provision, outlined at Ref C.
26. **Communications failure.**
- a. In the event of failure of communications equipment between Berry Hill Operations and DNV GL, the RAF Spadeadam Main Guard Room will be notified to tannoy any explosive testing related messages to station personnel.
  - b. In the event of total communications failure, all explosive testing at DNV GL will cease until such time that communications are re-established.
27. **MilEAMS failure.** RAF Spadeadam Flight Operations Assistants are responsible for raising NOTAMs on behalf of DNV GL. In the event of MilEAMS failure, NOTAM requests will be emailed, telephoned or faxed to the NOTAM office.
28. **ATM staffing.** RAF Spadeadam is currently manned to meet D510/A range operations. This ACP will not increase the output or workload of ATM personnel.

### **Operational Impact**

29. This ACP, if approved, will increase the volume of useable Class G airspace when DNV GL operations are conducted outside of D510/A range activity. In précis, the positive improvements delivered will include:
- a. Increasing airspace available for IFR/VFR traffic inbound/outbound to Newcastle International Airport to manoeuvre.
  - b. Reducing the volume of airspace GA traffic and emergency services air systems must avoid when DNV GL are operating.
  - c. Reducing the likelihood of DA infringements by GAT conducting NDB approaches to Carlisle Airport runway 25. See Annex B Fig. 7.

ACP Op Report: RAF Spadeadam; DNV GL DA (EGD510C Desig.)

### **Economic Impact**

30. The exact details of the positive economic impact are difficult to specify, however, the generic savings in time and fuel for the GA community, but most importantly the Great North Air Ambulance Service whose task is time-critical in life-or-death situations is clear. There will be no additional time or monetary costs involved in the management of the airspace by RAF Spadeadam or operations conducted by DNV GL.

### **Safety Management**

31. A Safety Assessment of Change has been conducted by RAF Spadeadam Air Safety staff. The report is at Annex D.

### **Airspace and Infrastructure Requirement**

32. RAF Spadeadam ATM staff currently manage the EG D510 complex, and are control authority for LFA13. Operating agreements are already in place with both Carlisle and Newcastle Airports outlining the safe provision of ATS in the vicinity. The proposed DA (EG D510C desig.) currently sits wholly within EG D510.

### **Timescales**

33. If approved, it is anticipated that this airspace change will be published in the AIRAC 1809 cycle (16 Aug 18).

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**ANNEX A  
TO ACP OP REPORT  
RAF SPADEADAM DNV GL DA**

**CURRENT LETTER OF AGREEMENT BETWEEN BERRY HILL OPERATIONS, ROYAL AIR  
FORCE SPADEADAM AND GL INDUSTRIAL SERVICES UK LTD**

{Attached under separate cover}

ACP Op Report: RAF Spadeadam; DNV GL DA (EGD510C Desig.)

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SUPPORTING MAPS, CHARTS AND DIAGRAMS

Figure 1: Position of Test Site East (Main Site), Test Site West and R8 Test Site on OS 1:25,000 map.

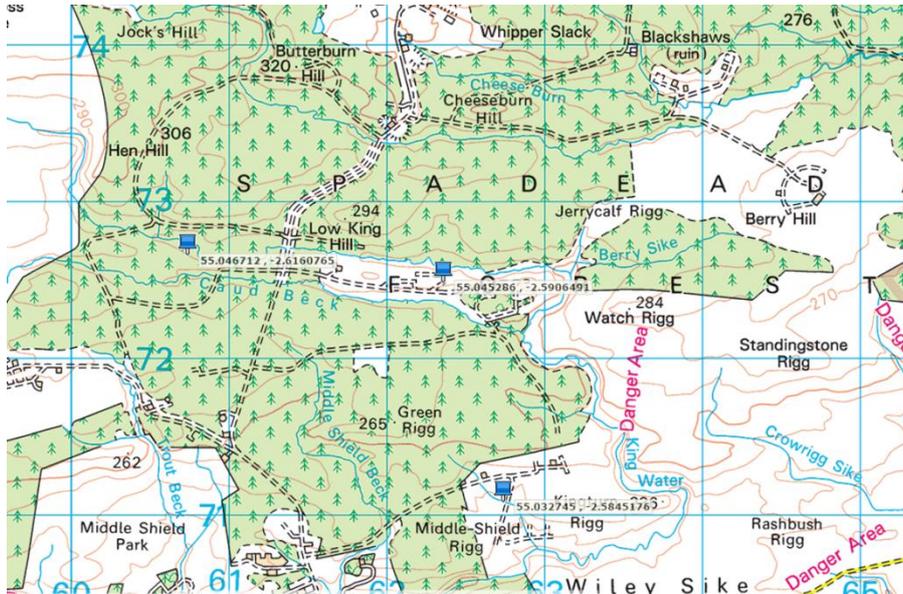


Figure 2: Position of Test Site East (Main Site), Test Site West and R8 Test Site on satellite imagery.

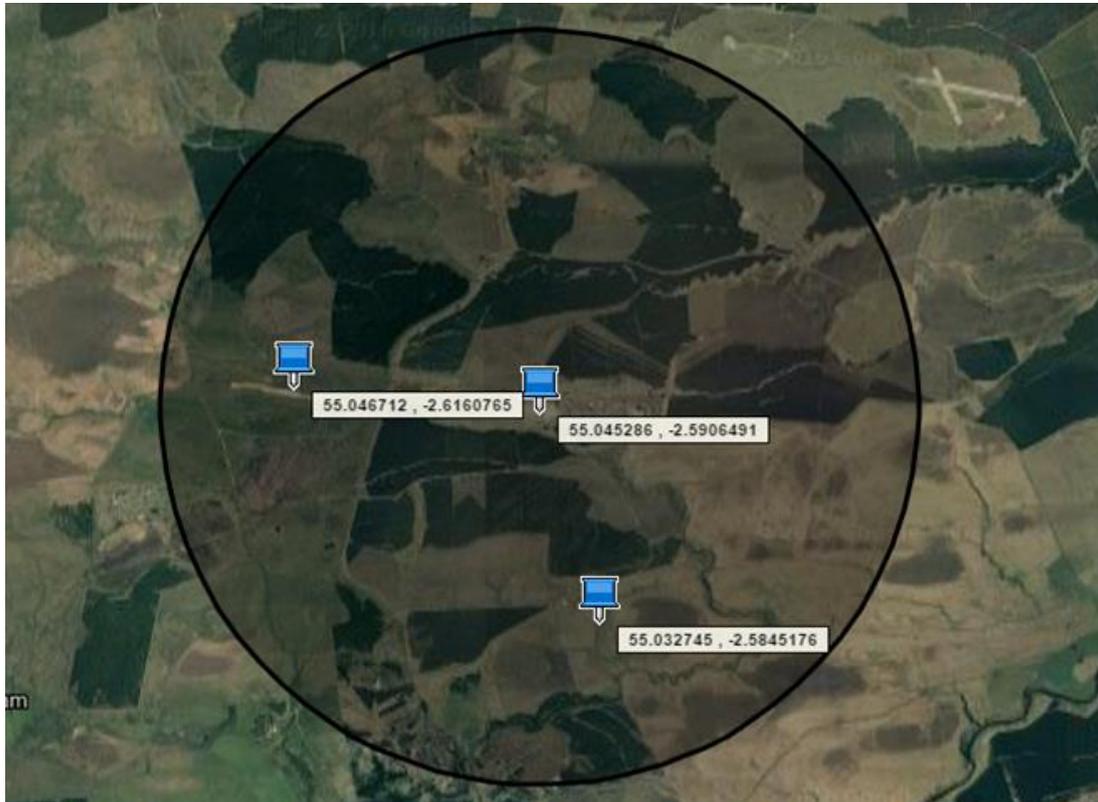
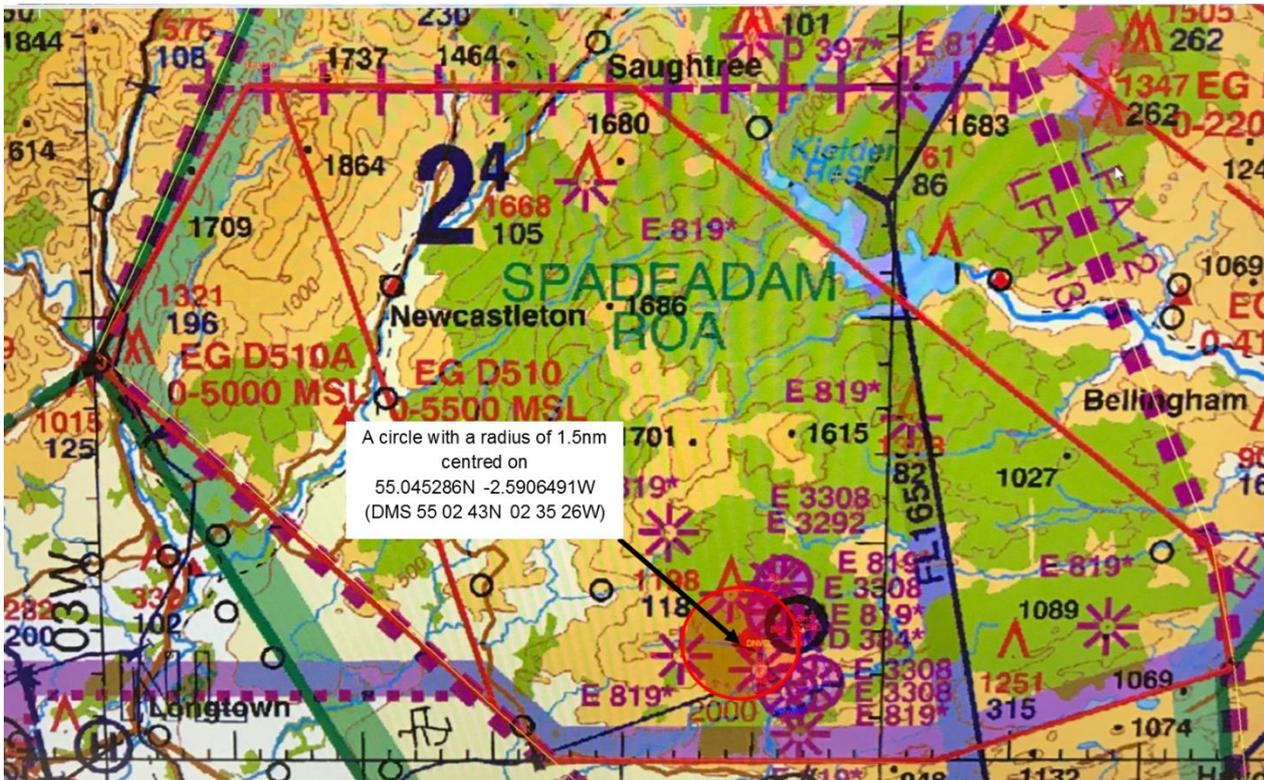
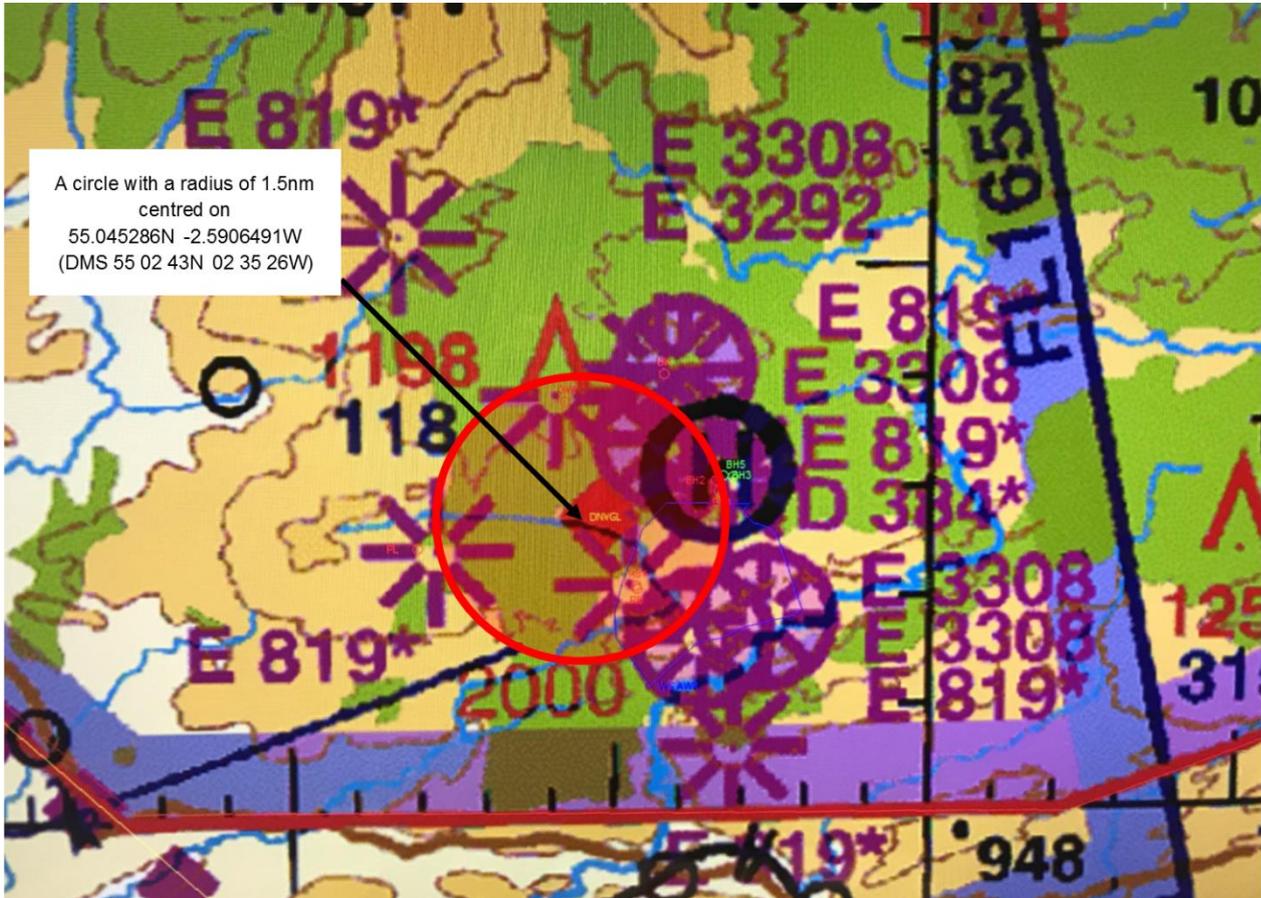


Figure 3: Depiction of proposed new DA segment (EG D510C) within EG D510 DA complex on UK Low Flying Chart.



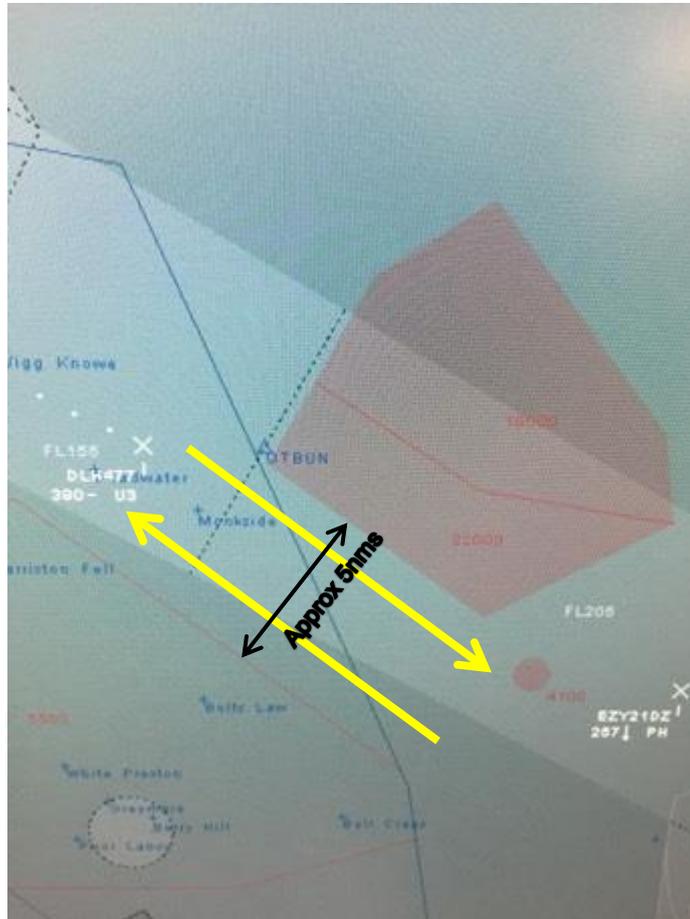
Note: Proposed DA segment is a circle with a radius of 1.5nm centred on 55.045286N - 2.5906491W (DMS 55 02 43N 02 35 26W)

Figure 4: Depiction of proposed new DA segment (EG D510C) within EG D510 DA complex on UK Low Flying Chart (close-up).



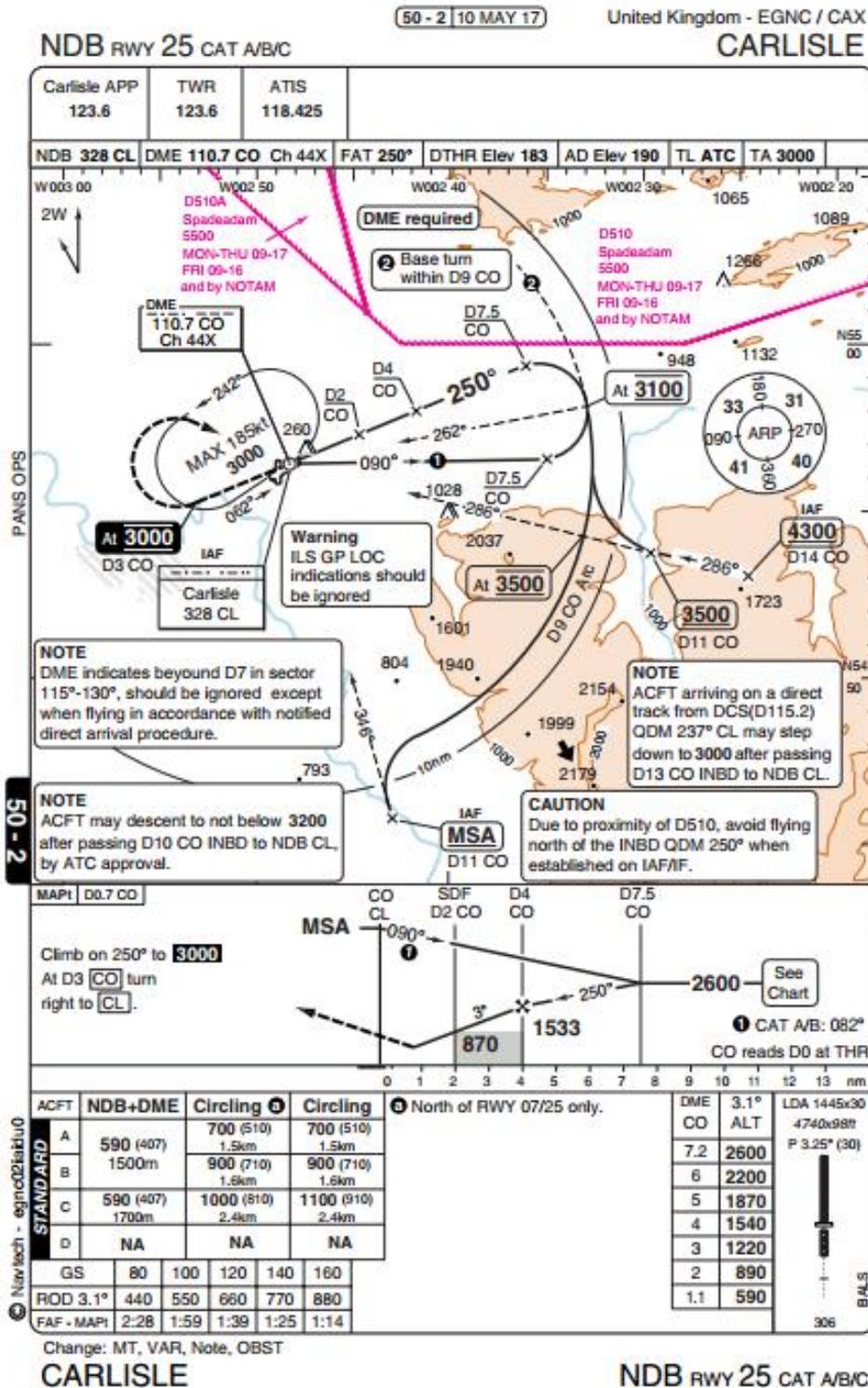
Note: Proposed DA segment is a circle with a radius of 1.5nm centred on 55.045286N - 2.5906491W (DMS 55 02 43N 02 35 26W)

Figure 5: Traffic flow between EG D510 and EG D512 when EG D510 is active on RDS1600 radar display.



ANNEX B  
TO ACP OP REPORT  
RAF SPADEADAM DNV GL DA

Figure 6: Terminal Approach Chart for EGNC NDB Runway 25, showing proximity to EG D510.



ACP Op Report: RAF Spadeadam; DNV GL DA (EGD510C Desig.)

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**ANNEX C  
TO ACP OP REPORT  
RAF SPADEADAM DNV GL DA**

**DRAFT LETTER OF AGREEMENT BETWEEN BERRY HILL OPERATIONS, ROYAL AIR  
FORCE SPADEADAM AND GL INDUSTRIAL SERVICES UK LTD**

{Attached under separate cover}

ACP Op Report: RAF Spadeadam; DNV GL DA (EGD510C Desig.)

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**ANNEX D  
TO ACP OP REPORT  
RAF SPADEADAM DNV GL DA**

**RAF SPADEADAM SAFETY ASSESSMENT OF CHANGE OF PROCEDURE 17/01: DNV GL  
PROCEDURES**

{Attached under separate cover}

ACP Op Report: RAF Spadeadam; DNV GL DA (EGD510C Desig.)

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**ANNEX E  
TO ACP OP REPORT  
RAF SPADEADAM DNV GL DA**

**DRAFT AIP ENTRY FOR EG D510C**

<p>EG D510C SPADEADAM A circle, 1.5nm radius centred at 550243N 023526W</p>	<p>Upper limit: 18000ft ALT Lower limit: SFC</p>	<p><b>Activity:</b> Demolition / Live Firing / Surface Explosions / Unmanned Aircraft System (VLOS/BVLOS).</p> <p><b>Hours:</b> Mon-Thu 0900-1700 (0800-1600), Fri 0900-1600 (0800-1500); and as activated by NOTAM.</p> <p><b>Service:</b> DACS: Spadeadam on 128.725 MHz. DAAIS: Newcastle APP on 124.375 MHz and Carlisle Tower on 123.600 MHz.</p> <p><b>Contact:</b> Pre-flight information / Booking: Range ATC, Tel: 01697-749486/749488.</p> <p><b>Danger Area Authority:</b> HQ Air.</p> <p><b>Remarks:</b> When EG D510C is activated in isolation from EG D510B, Unmanned Aircraft System (BVLOS) operations are not permitted</p>
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**ANNEX F  
TO ACP OP REPORT  
RAF SPADEADAM DNV GL DA**

**EG D510C NOTAM EXAMPLE**

Group: M\_SPADEADAM / User: M\_SPADEADAM/RC UTC Time: ####.##.##-##:##:##

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AFP#### #####  
GG EGAAYWYO EGDYMYWF EGDYRYWYO EGDRZXAO EGDRZXCF EGDSYWYO EGDXYWYO  
EGDYYWYF EGKRZTZX EGLLBAWN EGNOYWYO EGOMYWYW EGOSYWYF EGOSZGZX EGOVYWYF  
EGOVZGZX EGOWZGZX EGPFZXAO EGQAYWYO EGQLZGZX EGQLZXCO  
##### EUECYIYN  
(D####/## NOTAMN  
Q) EGPX/QRDXX/IV/BO /W /000/055/5502N043 00235W014  
A) EGPX B) ##### C) #####  
E) SPADEADAM DANGER AREA ACTIVE  
EG D510C SPADEADAM  
NO DANGER AREA CROSSING SERVICE AVAILABLE.  
F) SFC G) 5500FT AMSL)

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