



Defence Infrastructure Organisation

Ref: D026/CAP 1616 Airspace Design - STAGE 1

Date: 28 February 2018

BEYOND VISUAL LINE OF SIGHT (BVLOS) UNMANNED AIR SYSTEMS (UAS) OPERATIONS IN EG D026 – LULWORTH, Version 2

Introduction

1. The Defence Infrastructure Organisation is the Airspace Sponsor for Danger Area D026 Lulworth. A Statement of Need was recently submitted which requested the approval for use of Beyond Visual Line Of Sight (BVLOS) < 150KIAS Unmanned Air Systems (UAS) within this Danger Area. These air systems may also be referred to as Remotely Piloted Air Systems (RPAS) within this document.

2. This submission is anticipated to be a Level 0 change as current airspace dimensions will not be in anyway affected. There is no foreseeable reason to extend operations beyond the published hours of 0800-2359 Mon – Thurs and 0800-1600 Fri, except for urgent operational requirements.

Requirement

3. The requirement is to facilitate the training and maintain currency of military UAS operators, both for operational work and to assist with range clearance checks within the range. The UAS to be used will be in the 'Mini' category (<20Kg) and the maximum airspeed will be less than 150KIAS. All platforms to be used will have a full military 'Release to Service' authorisation and appropriate Air System Safety Case approval.

Airspace

4. The Danger Area is located on the south coast of England, approximately 10nm south-west of Bournemouth airport – see Fig 1. The north-eastern boundary of the Danger Area is within 5 nm of the Bournemouth Airport CTA. The coordinates of the D026 boundary are:

504020N 0020755W - 503950N 0020732W - 503751N 0020753W - 503644N 0020813W -
503503N 0020440W - 503030N 0020043W - 502654N 0020230W - 502500N 0020842W -
502500N 0021500W - 502918N 0021718W - 503000N 0021700W - 503154N 0021624W -
503536N 0021612W - 503700N 0021447W - 503800N 0021430W - 503825N 0021137W -
504028N 0021137W - 504020N 0020755W.



Fig 1.

Airspace Buffer Requirements

5. The Safety & Airspace Regulation Group (SARG) Policy for Special Use Airspace – Safety Buffer Policy for Airspace Design Purposes, states that a safety buffer of 5nm is required to mitigate the hazard posed by air systems (including UAS) unintentionally exceeding the area boundaries and encroaching into adjacent airspace structures. The Policy Statement does however provide for the airspace buffer to be reduced from 5nm to 3nm from the edge of a TMA, CTA or CTR, subject to appropriate mitigation. In order to apply this reduced buffer, BVLOS flying operations will be restricted to a dedicated area within the boundaries of the Danger Area known, in military terms, as a Restricted Operating Zone (ROZ). The ROZ will be restricted to the southern half of the overland training area and the immediate coastal area (shown as Lulworth Inner in Fig 1). The northern ROZ boundary will follow the existing western edge of the DA, then follow a line 503813N 0021301W, 503746N 0021005W and 503810N 0020750W to the eastern boundary line. This approximately coincides with the minor road which routes approximately east to west through the Surface Danger Area as shown in Fig 2, which will assist in visual identification of the northern boundary of the ROZ. This internal boundary will satisfy the lateral separation requirements (3nm) from the Bournemouth CTA. Additionally, a maximum operating level of FL115 will ensure that the statutory Vertical Buffer Requirement of 2000ft is also met with respect to the Portsmouth CTA Sector 9 immediately to the north of the Danger Area. Flying operations extending over the sea area will remain within the Danger

Area boundaries. The maximum operating level of FL 115 will also ensure a minimum of 5000ft vertical separation from Conditional Route N866.



Fig 2.

6. Further mitigations to support the reduced lateral buffer requirement are:
 - a. Proven software installed in all UAS will ensure that the air platforms remain within the designated operating area. In the event of a communications link failure, the UAS will return to its point of origin or terminate its flight immediately.
 - b. UAS Users will remain in radio contact with Lulworth Range Control at all times. Range Control has landline communications with Plymouth Military Radar Unit which provides a LARS within the region. Plymouth Mil are able to provide timely information to Range Control in the event of unknown aircraft encroaching the Danger Area who, in turn, will order 'cease flying' if necessary.
 - c. Specific mandatory operating instructions (Lulworth Range Orders) for all users will provide appropriate direction and guidance. (Enclosure 1).
 - d. Sentries may be posted at strategic points (radio equipped) if required to monitor the airspace, however the requirement to remain vigilant at all times is instilled in all range users.

Adjacent Airspace Users

7. Engagement has taken place with all the organisations below to discuss the proposal. Feedback from airspace users strongly suggests that the local GA community avoids the airspace completely during its published hours of operation.

a. Flag Officer Sea Training (FOST) - There is a Letter of Agreement between FOST and Lulworth which formalises the arrangement to de-conflict activities within the Danger Area as required. All air activity is controlled by Plymouth Mil Radar, who have agreed that the requested use of BVLOS UAS will not affect their operations. (Enclosure 2).

b. Plymouth Military Radar – This unit provide a LARS during their published hours. A DACS is available when Danger Area activities permit. A DAAIS is available on request.

c. Dorset Gliding Club – Situated 1nm north of Bovingdon, recent engagement with the Chief Flying Instructor has confirmed that the club has no objections to the proposal. Their flying operations are always conducted well to the north of the Danger Area (Enclosure 3).

d. Bournemouth Airport – The ATC authority has stated that they would expect minimal or no impact on their operations as the Danger Area is published as active as per the AIP and aircraft are routed clear of the area. ATC advise pilots to contact either Plymouth Mil or London FIR for information on the area activity. (Enclosure 4).

Diagrams, Charts and Documents

8. The only change to the AIP is at ENR 5.1 PROHIBITED, RESTRICTED AND DANGER AREAS;

For Danger Area EG D026 LULWORTH

Activity: Live Firing/Unmanned Aircraft System (VLOS)

Amend to read:

Activity: Live Firing/Unmanned Aircraft Systems (VLOS/BVLOS less than 150Kts)

Remarks: Unmanned Aircraft Systems (VLOS/BVLOS less than 150Kts) will not be conducted above FL115 and north of a line 503813N 0021301W, 503746N 0021005W and 503810N 0020750W.

Summary

9. It is concluded that approval to operate BVLOS UAS in D026 would not adversely affect nor impose any undue restrictions on general aviation traffic in the area. Suitable mitigation has been applied as required in order to comply with the SARG Airspace Buffer Policy and the use of air systems under MAA authorisation provides appropriate mitigation that they are safe to use, are being used safely, and will remain within their allocated airspace.

**Enclosure 1 to
BEYOND VISUAL LINE OF SIGHT (BVLOS) UNMANNED AIR
SYSTEMS (UAS) OPERATIONS IN EG D026 – LULWORTH, Version 2**

Dated 28 February 2018

PROPOSED AMENDMENT TO LULWORTH RANGE ORDERS

Standing Order No 8 - Remotely Piloted Air Systems (RPAS) (also referred to as Unmanned Air Systems (UAS) or Drones)

1. The use of Remotely Piloted Air Systems on the Training Estate is strictly regulated by the Military Aviation Authority (MAA). All users are to comply with the MAA's Regulatory Articles RA 1600, RA 2320 and RA2321 which mandate the use and training requirements of military RPAS. These systems are classified according to their capabilities and can be categorised as Visual Line Of Sight (VLOS) and Beyond Visual Line Of Sight (BVLOS).

a. VLOS flight may be conducted across the training area in locations allocated by Range Control. Operations are to be conducted iaw DIO SD Trg SOI J7 No 33 – Use of Commercial Remotely Piloted Air Systems on the DIO SD Training Estate and the air system's operating manual.

b. For BVLOS operations, all flying is to be in compliance with the air system's individual Release to Service authorisation and operating manual. BVLOS operations can only be conducted within the Restricted Operating Area (ROZ), the dimensions of which will be agreed with and briefed by Range Control. The following restrictions to the ROZ apply:

(1) The maximum upper level of the ROZ must not exceed FL115 (approx 11,500ft amsl), but should normally be restricted to 500ft above the minimum height (agl) required to achieve the training objectives.

(2) Flying is not to be conducted north of a line drawn between:

| | |
|----------------------|-----------------|
| Lat/Long: | OS Grid Ref: SY |
| 503813N 0021301W, | 8475 8194 |
| 503746N 0021005W and | 8821 8110 and |
| 503810N 0020750W | 9050 8180 |

which coincides approximately with the minor road routing east-west between Lulworth and Grange Arch as shown on the diagram below:



2. Flying of any RPAS must only be conducted during the published opening hours of Lulworth Range. Any additional requirements outside of these times are subject to NOTAM action and must be pre-arranged through Range Control.
3. On arrival at the training area, the RPAS OIC-P is to:
 - a. Provide the Range Administrating Unit (RAU) with a Statement of Range Practice (SORP) that must contain the following information:
 - (1) Trace showing the RPAS Operating Area – The RPAS OIC-P must also submit a trace of the intended operating area.
 - (2) Appointments, qualifications, competency and currency.
 - (3) RPAS Categorization Authorization.
 - (4) Flight Safety plan.
 - (5) Emergency Flight Termination Plan.
 - (6) Post Crash Management procedures.
 - (7) Medical and emergency procedures.
 - (8) Confirmation of the maximum operating height of the RPAS.
 - b. Enter details in the unit flying log.

- c. Confirm flying times.
 - d. Ensure that all other units on the training area are aware of flight timings and the operating area.
 - e. Be able to communicate with the RAU.
4. On arrival at the launch site, the RPAS OIC-P is to:
- a. Establish communication with the RAU.
 - b. Ensure that all personnel involved in the activity are briefed on the intended use of the RPAS and any restrictions to personnel movements.
 - c. Obtain permission from the RAU to launch the RPAS.
 - d. Inform the RAU that the RPAS is launching and estimated time of flight.
 - e. Inform the RAU when the RPAS has been recovered.
5. On completion of flying, the RPAS OIC-P is to:
- a. Inform the RAU that the RPAS is on the ground and that all flying is complete for the day.
 - b. Ensure that the launch and recovery site is left clean and tidy.
 - c. Enter details in the unit flying log.

System Failure

6. The RPAS OIC-P is to ensure that the Risk Assessment includes robust mitigation such that, in the event of a failure of the control system, the RPAS will not cause significant injury to personnel.

Air Incursion

7. In the event of any aircraft infringing the ROZ, the RPAS OIC-P must terminate flying immediately and report the matter to the RAU. The RAU is to attempt to identify the aircraft. The incident is to be reported using a Defence Air Safety Occurrence Report (DASOR) on the Air Safety Information Management System (ASIMS) in accordance with Reference B. The RPAS OIC-P is to report to Range Control to seek approval to re-launch.

Administration

8. Exercise administration may be carried out at the launch and recovery site.
9. Security of the launch and recovery site is a unit's responsibility and must be carefully controlled.

Medical

10. Units are to ensure they provide medical cover consistent with the training that is being carried out and the hazards identified in their risk assessment. Units must ensure the

tasking of those providing medical cover enables them to respond immediately to any accident. All personnel on the exercise should be aware of the medical cover provided within the unit and how to activate it if required. Guidance on medical cover is contained in Pamphlet 21. Medical cover must not be below that recommended.

Enclosure 2 to
BEYOND VISUAL LINE OF SIGHT (BVLOS) UNMANNED AIR SYSTEMS (UAS)
OPERATIONS IN EG D026 – LULWORTH, Version 2

Dated 28 February 2018

Engagement with Plymouth Mil Radar Unit, dated 14/2/18

Having discussed BVLOS within EGD 026, Plymouth Mil and FOST have no objections to the proposal. This is based on the fact that all BVLOS will be conducted within the confines of EGD 026 and in particular that the operation will remain overland. The existing Letter of Agreement will need to be amended to reflect BVLOS takes place within EGD 026.

Regarding buffer zones against BVLOS I do not believe that there is a policy or a requirement and we are content that any BVLOS activity within EGD 026 would not impinge on any of the SCXAS including EGD 031. Therefore we don't believe a Buffer of any form is required.

Regards

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Enclosure 3 to
BEYOND VISUAL LINE OF SIGHT (BVLOS) UNMANNED AIR SYSTEMS (UAS)
OPERATIONS IN EG D026 – LULWORTH, Version 2

Dated 28 February 2018

Engagement with Dorset Gliding Club, dated 11/12/17

Many thanks for taking the time to meet with me and discuss UAV operations in person.

I have no concerns in relation to these operations interfering with the gliding activity at Dorset Gliding Club.

Kind regards

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Enclosure 4 to
BEYOND VISUAL LINE OF SIGHT (BVLOS) UNMANNED AIR SYSTEMS (UAS)
OPERATIONS IN EG D026 – LULWORTH, Version 2

Dated 28 February 2018

Engagement with Bournemouth Airport, dated 8/11/17

Thank you for your email and apologies for the late reply. I had a good look through the details of the ACP for D026 and it seems that there will be minimal or no impact on Bournemouth ATC operations. We obviously have little experience on RPAS beyond BVLOS operations but it seems to me that if the maximum operating height is 2500 ft amsl and they stay south of the line you described on the map, there will be no impact on our operations. We have D026 promulgated as active up to 15000 ft on a daily basis irrespective of live firing or not and as we do not provide a Danger Area Crossing Service (DACS), we just stay clear of it and ask pilots to contact Plym Mil or London FIR for information on the area activity.

The only thing that comes to mind is that we have a Letter of Agreement with Plym Mil on crossing D031, which is next door to D026 and is routinely delegated to us for crossing but we have to stay above 3500 ft at all times. Perhaps the ACP might consider the proximity of D031 and its activity status and whether there is a need for a creation of a buffer zone. Do let me know if there is anything else I could help with.

Kind Regards

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