Snowdonia Aerospace Airspace Change Proposal (Stage 4B), ACP-2019-58
Llanbedr Aerodrome Danger Area (DA)

Annex 9 – Draft Letter of Agreement (LOA) with EG D201 / D202 Aberporth Range Air Control

Airspace referred to in this document is not yet approved.

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Document Details

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1. Table of Contents

2. Introduction

This Draft Letter of Agreement (LOA) is being prepared in anticipation of a successful ACP application, ACP-2019-58, for a Danger Area (DA) centred on Llanbedr Aerodrome. To ensure that the airspace is utilised as effectively as possible whilst mitigating any considered impact to a key Defence task, the MOD Danger Area Airspace Manager (DAAM) and QinetiQ requested that Snowdonia Aerospace Centre (SAC) enter into a LOA detailing the requirement for taking part in regular planning meetings and mutually agreed deconfliction of airspace use with regard to access to the EG D201 and D202 Air Range complex, to alleviate any potential conflicts and issues.

The D201 Range Danger Area covers 6,500km^2 of Cardigan Bay from sea level to unlimited height. In addition, D202 was specifically created to enable the safe operation of military Unmanned Air Systems (UAS) from West Wales Airport and extends a further 40km east of Aberporth out over the Sennybridge military training area. QinetiQ operates the Range from a main site at Aberporth on behalf of UK MOD under what is known as the Long-Term Partnering Agreement (LTPA). The purpose of the LTPA is to deliver defence test, evaluation and training support services to ensure air launched weapon systems, associated sub-systems and UAS are safe and fit for purpose.

Llanbedr Aerodrome, operated as Snowdonia Aerospace Centre (SAC), sits a further 14 nautical miles north-east of the north-eastern corner of D201, and is being developed for commercial novel / experimental aerospace test and evaluation as well as providing General Aviation facilities, including flying training, air racing, aerobatic display practice and parachute training / skydiving. Ballooning is also forecasted to take place from the Aerodrome. Work is being undertaken to obtain a CAA Aerodrome Licence.

Llanbedr is positioned approximately 30 nautical miles (58 km) south-southeast of RAF Valley, which has a number of military flight training squadrons and provides Visual / Instrument Flight Rules (VFR / IFR) services together with military ATZ (MATZ) transit services for other airspace users. Supporting operations from RAF Valley, there is a designated tactical training area in North Wales from 6,000ft to FL600 and a large area of intense aerial activity (AIAA) from surface to 6,000ft. altitude.

Llanbedr also sits approximately 20 nautical miles (35km) south-southeast of Caernarfon Airport (itself 11 nautical miles south east of RAF Valley), which operates scenic and training flights all year round and is home to the Wales Air Ambulance and the HM Coastguard helicopters operated by the Bristow Group.

Finally, Talybont and Peniarth grass strip airfields are approximately 11 nautical miles (20km) south of Llanbedr, providing support to agricultural and general aviation.

3. Effective Date

This LOA sets out general conditions of agreement and becomes effective when the Llanbedr DA is approved or at a date when the DA is officially declared operational and will continue unless amended or revoked by mutual agreement.

4. Review Process

This LOA shall be reviewed at least annually or when requested in writing by any of the parties to this Agreement. The annual review may be conducted by e-mail correspondence, unless a material change to procedures is required, in which case it is recommended that all parties meet to discuss the proposed changes. Once any required changes are agreed, a revised LOA shall be produced and signed. In the event that the annual review recommends no changes to the LOA, the date of the review and the agreement of all parties is to be recorded for audit purposes.

5. Revisions, Deviations and Cancellations

1) Revisions to this LOA can only be made with the mutual agreement of all parties.
2) Instances may arise where deviations from these procedures may become necessary. Under these circumstances, all parties are expected to exercise their professional judgement to ensure the safety and efficiency of the operation and to co-ordinate any individual deviations from these procedures in an efficient and effective manner.
3) The procedures detailed in this LOA are designed to ensure and enhance safety and do not absolve airspace users from complying with extant legislation and procedures.
4) Cancellation of this LOA by mutual agreement of all parties may take place at any time; no party may independently terminate this Agreement.

6. General Aerodrome Information

Llanbedr Aerodrome, VHF 118.930

- Circuit height: 1000ft Llanbedr QFE.
- Circuit direction: RW17 and RW15 Right Hand, RW35 and RW33 Left Hand. RW05 / 23 Left Hand.

Note: The Llanbedr circuits given above for 17/35 and 15/33 are flown to the west out to sea for minimal turbulence and for noise abatement.

Aberporth Range Air Control, VHF ???.???

- *Details to be inserted.*
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7. Airspace description

7.1. General description

The proposed Llanbedr airspace design has been promulgated as a Danger Area (DA), rather than as a Radio or Transponder Mandatory Zone (RMZ / TMZ) in order to be compliant with CAA CAP722 Unmanned Aircraft System Operations in UK Airspace – Guidance & Policy. CAP722 states that "Unless able to comply with the current requirements of the Air Navigation Order (ANO), including the Rules of the Air, Unmanned Aircraft System (UAS/drone) flights which are operated beyond the visual line of sight (BVLOS) of the remote pilot are required to be contained within segregated airspace. The UK uses DAs as the primary method of airspace segregation for UAS operations".

The new airspace design is shown in Figure 1 below.

The combination of a segregated area for RDT&E activities local to Llanbedr Aerodrome and a corridor connecting that area to the existing D201 Cardigan Bay Danger Area means that the Llanbedr DA will always have a natural "keyhole" shape, angled to the south-west.

7.2. Airspace definition

The Danger Area dimensions are detailed below in terms of World Geodetic System 1984 (WGS84) co-ordinates of the boundaries, along with associated vertical levels proposed. The co-ordinates are in the format degrees, minutes and seconds. With regard the vertical dimensions, RAF Valley aircraft operate on the Regional Pressure Setting (RPS) when they are conducting their medium level activity and OC STANAT has confirmed that expressing the upper height as XXXX ft as opposed to Flight Level (FL) XX will make it easier for RAF Valley to safely deconflict.

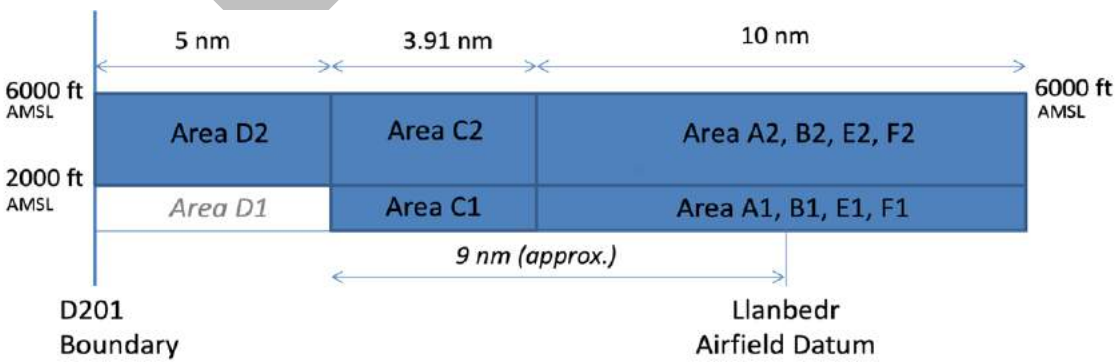

Fig. 1 *- Airspace Design for ACP-2019-58, Llanbedr Danger Area*

- Area A1: a cylinder of 2.5 nautical mile radius, centred on the main runway 17/35, from surface to 2000 feet altitude above mean sea level (AMSL) that is consistent (in the main) with a potential Aerodrome Traffic Zone (ATZ) - which is the subject of the current second Airspace Change application ACP-2020-02 (currently paused) - but clipped to the east by approximately 1 nautical mile. The railway line and A496 main road provide useful (but not definitive) visual geographic features for delineation of the eastern boundary. Area A1 is bounded by:

  525022N 0040522W

  524617N 0040510W

  524817N 0040738W

  then clockwise by the arc of a circle radius 2.5 NM centred on

  524817N 0040738W

  to

  525022N 0040522W

- Area A2: extends Area A1 from an altitude of 2000 feet up to 6000 feet AMSL.
- Area B1: a partial annulus of 2.5 nautical mile inner radius, 5 nautical mile outer radius, centred on the main runway 17/35, extending to the west and angled west/south-west, from surface to 2000 feet altitude. Areas A+B combined provide an extended area for inshore/coastal operational testing. The Area B/F division is offset from the coast by approximately 1 nautical mile to minimise the impact on any paragliding and hang-gliding activities in the vicinity of Harlech. Area B is bounded by:

  524617N 0040510W

  524334N 0040503W

  524817N 0040738W

  then clockwise by the arc of a circle radius 5 NM centred on

  524817N 0040738W

  to

  525307N 0040947W

  525028N 0040939W

  524817N 0040738W

  then anti clockwise by the arc of a circle radius 2.5 NM centred on

  524817N 0040738W

  to

  524617N 0040510W

- Area B2: extends Area B1 from an altitude of 2000 feet up to 6000 feet AMSL.
- Area C1: a rectangle of 5 nautical mile width and 8.91 nautical mile length that extends from the centre of the airfield, coincident with Area A, tangentially out toward Danger Area D201. Areas A+C combined provide an extended area for offshore/maritime operational testing. Area C is bounded by:

  524943N 0041102W

  524223N 0041920W

  523933N 0041233W

524605N 0040510W

524617N 0040510W

524817N 0040738W

then clockwise by the arc of a circle radius 2.5 NM centred on

524817N 0040738W

to

524943N 0041102W

- Area C2: extends Area C1 from an altitude of 2000 feet up to 6000 feet.
- *Area D1: It is proposed that this area remains outside the DA to maintain a "tunnel" from surface to 2000 feet for low-level air traffic transiting to / from RAF Valley*
- Area D2: a rectangle of 5 nautical mile width and 5 nautical mile length from the edge of Area C1/C2 that further extends Areas A+C to create either an extended straight-line testing route and / or a "bridge" into the existing Danger Area D201, from an altitude of 2000 feet up to 6000 feet. Access to D201 will provide an ability for extended range / endurance / altitude testing and will be managed via Letter of Agreement with QinetiQ/MOD. Area D2 is bounded by:

  524223N 0041920W

  523933N 0041233W

  523527N 0041712W

  523816N 0042358W

  524223N 0041920W

- Area E1: an arc of 5 nautical mile outer radius, centred on the main runway 17/35, that extends the Danger Area to the east of the railway line and A496 main road toward the Rhinog mountains, from surface to 2000 feet AMSL. It is intended that a minimum altitude of 500 feet above ground level (AGL) will be maintained in this area at all times, subject to further CAA review of individual Operating Safety Cases (OSC). Area E is bounded by:

  524334N 0040503W

  525307N 0040530W

  524817N 0040738W

  then clockwise by the arc of a circle radius 5 NM centred on

  524817N 0040738W

  to

  524334N 0040503W

- Area E2: extends Area E1 from an altitude of 2000 feet up to 6000 feet AMSL.
- Area F1: a partial annulus of 2.5 nautical mile inner radius, 5 nautical mile outer radius, centred on the main runway 17/35, extending Area A1 to the north, from surface to 2000 feet altitude. Areas A+F combined provide an extended area for coastal/lowland operational testing, but it is intended that no novel aerospace activity will be conducted to the east of the railway line and A496 main road in Area F. Area F is bounded by:

  525028N 0040939W

  525307N 0040947W

  524817N 0040738W

then anti clockwise by the arc of a circle radius 5 NM centred on

524817N 0040738W

to

525307N 0040530W

525022N 0040522W

524817N 0040738W

then clockwise by the arc of a circle radius 2.5 NM centred on

524817N 0040738W

to

525028N 0040939W

- Area F2: extends Area F1 from an altitude of 2000 feet up to 6000 feet.

7.3. Airspace utilisation

Assuming a minimum target of 160 days occupancy per year for novel aerospace systems activities at Llanbedr, this gives the following predicted number of days Danger Area activation per year for each the various sub-areas (Table 1):

DA sub area	No. days of activation
Area A (over the aerodrome)	107
Area B (inshore)	35
Area C (offshore corridor to D201)	12
Area D (offshore corridor to D201)	12
Area E (toward Rhinog mountains)	6
Area F (coastal lowland / Harlech)	6
Max. altitude <2000ft	71
Max. altitude <6000ft	36

***Table 1** - Estimate of DA annual daily usage*

Please note that these estimates are indicative only and intended primarily to show the usage of the various sub-areas relative to each other and to allow any potential impact on other airspace users, the local community and the surrounding environment to be determined.

To complete the assessment of utilisation, Figures 2a to 2f show the most likely combinations of DA sub-areas that will be activated together showing the remaining areas to both east and west that will still be available for transiting aircraft – as well as over the top above 2000ft for two-thirds of the time and above 6000ft for the remainder – and the number of days of estimated utilisation per year for each combination. Note that the number of days per year for activation of Area A represents those times when it is activated in isolation and that it is estimated it will be activated on 107 days a year in total when also used in combination with other areas as per Table 1. It is also estimated that Area C will be activated for a total of 24 days a year when it is used in combination with Area D.

There are also combinations of sub-areas that we do not envisage being activated together:

- Activation of Area E is unlikely to be combined with Areas B and / or C and / or F (and vice-versa) such that there will always be a transit route to the immediate east (or west) of the airfield for General Aviation when the DA is activated.
- Either Area B or Area C will be activated, but they will not normally be activated together.

Fig. 2a *- Area A, 36 days/year with 24 days/year below 2000ft*

Fig. 2b *- Area A + B, 35 days/year with 24 days/year below 2000ft*

Fig. 2c *- Area A + C, 12 days/year with 8 days/year below 2000ft*

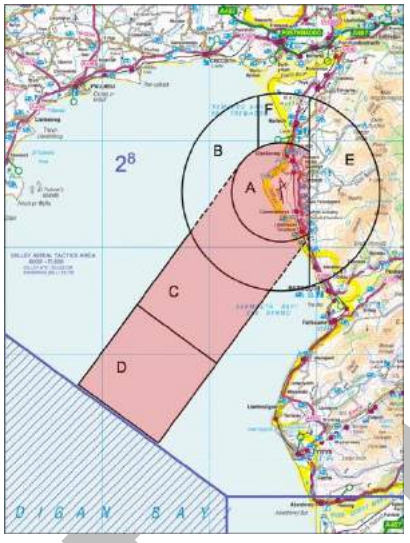

Fig. 2d *- Area A+C+D, 12 days/yr with 0 days/year below 2000ft*

Fig. 2e *- Area A + E, 6 days/year with 4 days/year below 2000ft*

Fig. 2f *- Area A + F, 6 days/year with 4 days/year below 2000ft*

7.4. Airspace management principles

European Commission Regulation (EC) No 2150/2005 of 23 December 2005 lays down common rules for the flexible use of airspace (FUA). In the UK, CAP 740, UK Airspace Management Policy, serves as a means of compliance to the essential requirements of both Reg (EC) 2150/2005 (Flexible Use of Airspace Regulation) and Reg (EU) 373/2017 (Common requirements for providers of air traffic management/air navigation services). CAP 740 also ensures compliance with supporting Eurocontrol guidance.

SAC intend to fully follow the stated principles within CAP 740 as part of the operation of the proposed ACP-2019-58 for the Llanbedr Danger Area. Section C10 of Appendix C (Military ASM Policy) shall also be considered, where possible, when it applies to a civil DA, and Collaborative Decision Making (CDM) will be implemented via this Letter of Agreement (see Sections 9 and 10).

7.5. Air Traffic Management principles

The following Air Traffic Management principles will apply within the operation of the proposed ACP-2019-58 for the Llanbedr Danger Area:

- None of the areas of the proposed DA will be permanently active and will only be activated by Notice to Airmen (NOTAM) when novel aerospace flying activities are scheduled to take place.
- Activation via NOTAM will be provided 24 hours in advance and the DA will only be active for the minimum time necessary. Airfield contact details will be included in the NOTAM.
- Normal operating hours for novel aerospace activities will be 0900 to 1700, Monday to Friday, apart from rare and exceptional circumstances. Weekend and out-of-hours operations will be available for general and recreational aviation activities.
- A Flight Information Service (FIS) will be provided by SAC from take-off to landing for all novel aerospace operations within the proposed DA. The core FIS will be augmented with an Unmanned Traffic Management (UTM) system with a minimum ADS-B Traffic Display. Llanbedr FIS will also provide a Danger Area Activity Information Service (DAAIS) for all airspace users in the vicinity of the DA.
- It is anticipated that the novel aerospace system will be equipped with an ADS-B Out transponder as a minimum electronic conspicuity capability when operating outside of Area A.
- The novel aerospace system crew is responsible for monitoring flight systems and communicating directly with Llanbedr FIS or QinetiQ / MOD Aberporth ATC.
- In addition, the novel aerospace system crew is to ensure that the aircraft remains within the confines of the segregated airspace during both normal operation and in the event of any routine emergency. The novel aerospace system will be expected to "geo-fence" and maintain a buffer to prevent inadvertent departure from the DA. This, and other safety-related issues, will need to be addressed within the Operating Safety Case (OSC) for the novel aerospace system and will be subject to review and approval by the CAA before operation within the DA will be allowed.

8. Hours of Operation

The normal operating hours for Llanbedr and the EG D201 / D202 Air Range complex are (all times in Local):

Llanbedr Aerodrome

- Aerodrome: Open 7 days a week VFR Daylight, PPR. Occasional military night ops. Police and SAR can operate into the airfield for fuel 24/7.
- FIS provision varies. A FIS and a DAAIS will always be provided during the NOTAM activation of the new DA.
- Drone flying VLOS, EVLOS & BVLOS. The latter NOTAM activity.
- Fly Snowdonia is a based light aircraft training school.
- Other activity includes, but is not limited to, glider expeditions, helicopter pleasure flights, air racing, parachuting/skydiving, ballooning and a number of based resident aircraft.

EG D201 / D202 Air Range complex

- *Details to be inserted.*
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9. Key agreed principles of the LOA

Key requests from MOD and QinetiQ were agreed at a meeting on 15th January 2021 and included advance notification of novel aerospace trials at Llanbedr requiring activation of the DA, mutually agreed deconfliction with other trials planned for D201 / D202, agreement of ATS protocols for transition of aircraft between the Llanbedr DA and D201, and a commercial agreement for provision of ATC services from Aberporth.

Use of D201 is subject to the standard booking procedures with the DAAM and to arrangements with QinetiQ for use of their NATS ATC.

10. Operating Procedures

10.1. Scope

The provisions of this LOA apply only when the Llanbedr DA is active. At all other times the airspace surrounding Llanbedr reverts to the background classification (Class G). Notification to Aberporth Range Air Control will be specific for use of D201 but shall include such information as to assist the Range with its DAAIS whenever any area of the Llanbedr DA is active.

10.2. Notification

SAC will provide:

- Normally at least two weeks in advance notice of any planned use of the DA with:
  - Specific dates
  - Area Airspace to be used
  - Altitude to be notified
  - Anticipated times / numbers / durations of flights
  - Type of novel aerospace activity
- One week in advance SAC will qualify information with:
  - Specific day dates for NOTAM activity
  - Confirmation of area airspace to be used
  - Confirmation of altitude
  - Qualification of times / numbers / durations of flights if possible
  - Any change to the type of novel aerospace activity
  - The likely date the NOTAM will be promulgated
- Not less than 24 hours in advance SAC will confirm NOTAM issued
  - SAC will endeavour to qualify operational times / groups of times as best possible in consultation with the Operator and with respect to weather.
  - SAC agree that on any given day if for operational or weather-related issues the airspace is *not required SAC will cancel the NOTAM forthwith and advise Ops RAF Valley.*
  - Out of hours operations – *i.e.* earlier than 0900 and / or later than 1700 and weekends.

Note that these notification periods relate to general activities within the Llanbedr DA. Additional advance notification for access to D201 is covered in Section 10.3.

10.3. Access to D201 Procedures

Whenever a novel aerospace system campaign involves the use of airspace Area D and access to D201 advance arrangements will have been made with the DAAM and Aberporth Range Air Control.

- SAC will ensure that the novel aerospace system trials organisation submits a standard Range booking via DAAM a minimum of ?? weeks in advance of the planned activity
- Further notification shall be no less than the details described above in Section 10.2.
- SAC will comply with the terms of LOA with Aberporth Range Air Control / QinetiQ

- Further details shall be passed as they become available. If required, a meeting shall be held in advance of the campaign to ensure that each signatory to this LOA is fully aware of the planned activity and their involvement.

Further discussion to follow on specific procedures, examples below:

- *Llanbedr FISO will contact Aberporth Range Air Control on engine start or 15 minutes before departure, whichever is earliest, to advise that novel aerospace system activity is about to commence within Area A and to reconfirm the novel aerospace system intentions. Normally ETA D201 boundary.*
- *When the novel aerospace system is ready to depart, if required the Llanbedr FISO will notify Aberporth of the departure and request clearance to enter D201 with an update on the ETA to the D201 boundary.*
- *Normally the drone pilot will communicate with Aberporth direct.*
- *The Llanbedr FISO will remain on VHF frequency 118.930 and provide a DAAIS.*
- *If a clearance cannot be issued, Llanbedr FISO may elect to depart the novel aerospace system and retain it within DA Area A until a clearance has been issued by Aberporth Range Air Control, relayed to the novel aerospace system and correctly read back.*
- *If Aberporth Range Air Control delays issue of the clearance they should give an estimate of when they expect to issue the clearance and the reason for the delay.*
- *Llanbedr FISO shall advise Aberporth Range Air Control of the status of Area A and whenever the status changes (i.e. HOT if novel aerospace system is operating (or about to operate) and COLD when novel aerospace system has departed or landed).*
- *During DA activity, excluding Area D, Llanbedr FISO will retain the novel aerospace system on VHF frequency 118.930 and will provide a BASIC service.*
- *A Danger Area Activity Information Service (DAAIS) will also be provided by Llanbedr FISO; this will be limited to the provision of information on the status of the DA and will include information on known traffic operating within the DA.*
- *The Llanbedr FISO is not authorised to provide a Danger Area Crossing Service (DACS), the FISO is limited to providing information on request only as to whether any novel aerospace system is within or has vacated the DA.*
- *A DAAIS is also available from London Information.*
- *Llanbedr FISO shall inform Aberporth Range Air Control whenever there is a change to the planned flying programme or when flying is suspended. It is likely that the DA will remain active when flying is temporarily suspended and pilots are still expected to request DAAIS information from Llanbedr FISO or Aberporth Range Air Control.*
- *Any novel aerospace system seeking to enter D201 will transfer to Aberporth Range Air Control at the boundary between Llanbedr DA Area D and D201J.*
- *Llanbedr FISO will remain on duty while novel aerospace system operations are conducted in D201.*
- *Aberporth Range Air Control will contact Llanbedr FISO 15 minutes before the novel aerospace system departs D201*
- *Any novel aerospace system returning to the Llanbedr DA from D201 will transfer to Llanbedr FISO at the boundary between D201J and Llanbedr DA Area D.*

10.4. Parachuting Specific Operating Procedures

Skydive Snowdonia has an approval to use Llanbedr Aerodrome and an extant LOA with RAF Valley is currently in place.

11. Application of LOA

Temporary changes to cover non-standard requirements may be made subject to prior consultation between Range Control Manager and the Aerodrome Manager or Senior AFISO Llanbedr.

Permanent amendments to this Letter of Agreement will be by negotiation between all parties.

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Signed	Signed
Appropriate Manager	*Aerodrome Manager, Llanbedr*
Dated:	Dated: