



**Snowdonia Aerospace Airspace Change Proposal
ACP-2019-58
Llanbedr Danger Area (DA)**

DRAFT Letter of Agreement (LOA) with Snowdonia Sky Sports

Airspace referred to in this document is not yet approved.

Document Details

Approval Level	Name	Authorisation
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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, Snowdonia Sky Sports (SSS) has requested that Snowdonia Aerospace Centre (SAC) enter into a LOA detailing the requirement for taking part in regular planning meetings and mutually agreed time and/or height deconfliction of airspace use, to alleviate any potential conflicts and issues.

The airspace surrounding Llanbedr Aerodrome is currently Class G. From the transfer of the aerodrome into private ownership in 2012, Snowdonia Aerospace LLP has and continues to develop the aerodrome to create a multi-use aerospace centre. Snowdonia Aerospace is an approved Air Navigation Service Provider (ANSP) and a local Flight Information Service (FIS) is provided to support day-to-day operations. A Temporary Danger Area (TDA) was previously consulted on in 2014 and has been implemented as and when required, either as a whole or in part, to support RDT&E activities and provide a safe corridor to D201 from 2015 to present. SAC has now proposed a new permanent Danger Area (detailed further in Section 7).

With regard Llanbedr Aerodrome, there are GA aircraft operations most flyable days with an average of 50 movements per month during winter months rising to 100 movements per month in summer. With regard current novel aerospace RDT&E activity, we estimate that the proposed effect of the airspace change will result in approximately 100 days of Danger Area activation per annum and 200 novel aerospace system flights per annum. This needs to be set in the context of 900 total aircraft movements at Llanbedr during 2019 (approximately) and a historical average of 9500 movements per year (approximately) in the period prior to QinetiQ / MOD vacating the site in 2004.

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. The LOA and the principles set out therein should also be sought to be implemented in any ongoing use of SAC for novel / experimental aerospace test and evaluation which involves the use of any Temporary Danger Areas as approved by the Civil Aviation Authority in advance of the formal approval and implementation of the DA.

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

- 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 will be a 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.
- Circuit height: 1000ft Llanbedr QFE.
- Circuit direction: RW17 and RW15 Right Hand, RW35 and RW33 Left Hand. RW05 / 23 Left Hand.
- Llanbedr Tower telephone number: 01341241356

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.

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.

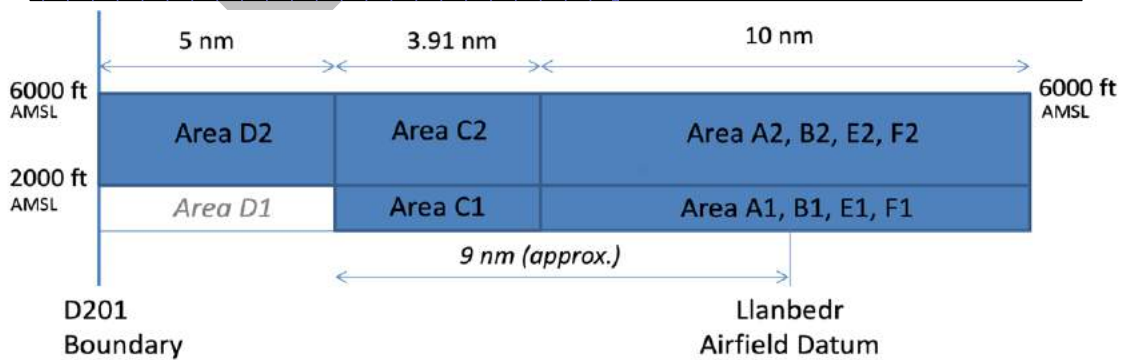
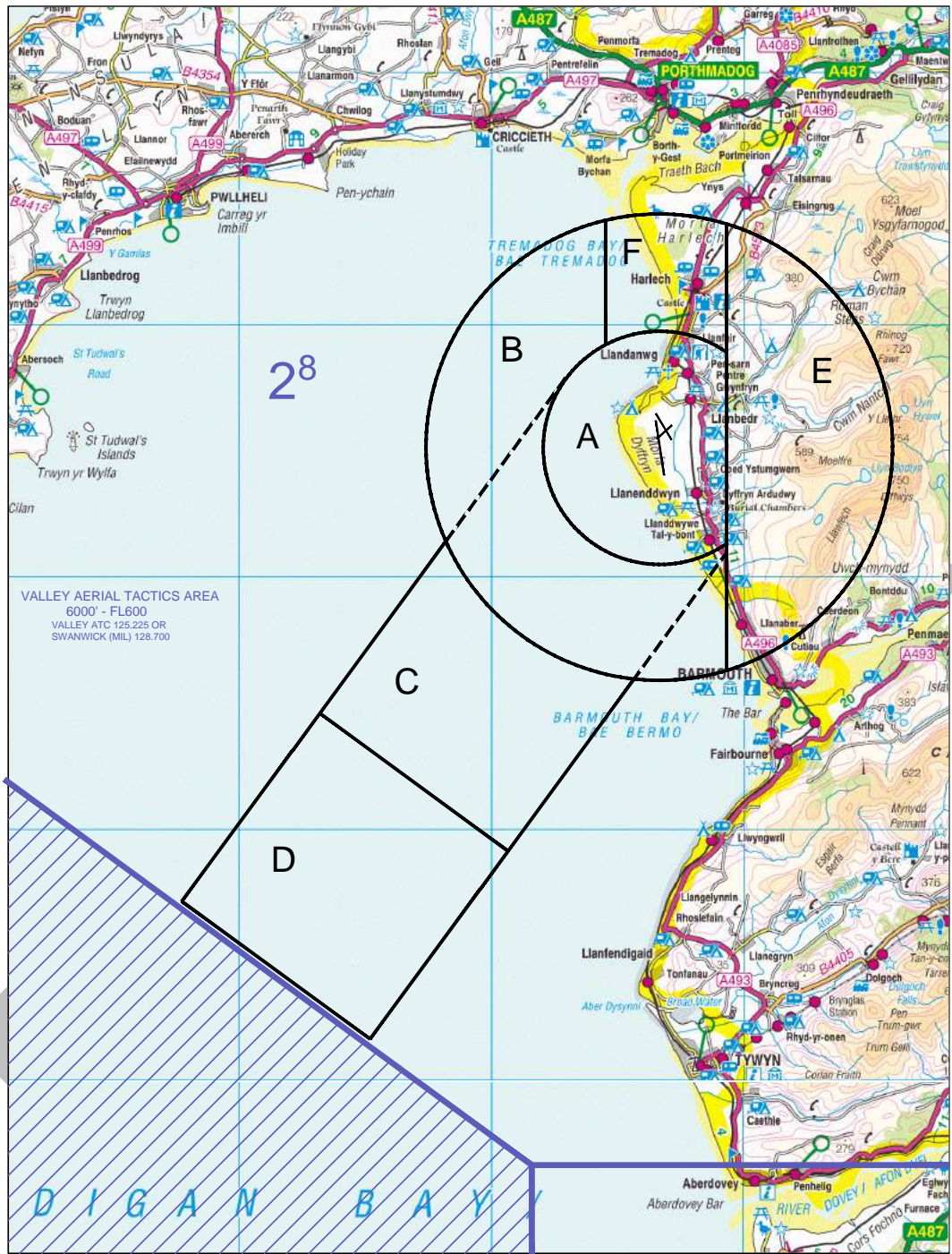


Fig. 1 - Airspace Design for ACP-2019-58, Llanbedr Danger Area

- 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

523526.44917N 0041712.24152W

523815.50586N 0042358.49984W

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

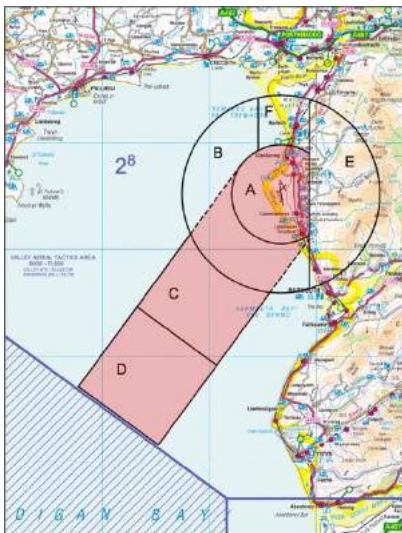


Fig. 2d - Area A+C+D, 12 days/yr with 0 days/year below 2000ft



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.

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. Operating Procedures

8.1. 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).

8.2. 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 hrs 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.
 - Out of hours operations – *i.e.* earlier than 0900 and / or later than 1700 and weekends.

9. Application of LOA

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

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

Signed

Snowdonia Sky Sports

Signed

*Aerodrome Manager, Snowdonia Aerospace
Centre*

Dated:

Dated: