



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

Annex 1 – Previous Temporary Danger Area Application

Document Details

Approval Level	Name	Authorisation
Author		Consultant
First reviewer		Airfield Manager
Second reviewer and release authorisation		Chief Executive

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1. Previous Temporary Danger Area Application

The following pages detail the previous Temporary Danger Area (TDA) application that was made by QinetiQ, in partnership with Snowdonia Aerospace LLP (then Llanvedr Airfield Estates LLP) in September 2014.

This document is provided as evidence of current airspace structures local to Llanbedr Aerodrome. The 'do nothing' option for ACP-2019-58 would also see Snowdonia Aerospace continue to rely on identification and activation of a Temporary Danger Area in accordance with CAP 1616 (Part 1a Temporary changes to the notified airspace design). Granting of a TDA is by no means guaranteed and there is a significant administrative process involved for both CAA and the Change Sponsor / designated TDA Authority that requires additional consultation and noticeably reduces the flexibility and responsiveness to market demand. This will degrade the UK RDT&E capability in environmentally-friendly aircraft and electric technologies and negatively impact jobs and related economic benefit in the local communities.



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Our Reference:
QINETIQ/MS/AD/LET1404197
Date: 15 Sep 2014



REQUEST FOR OUTLINE TEMPORARY DANGER AREA “APPROVAL IN PRINCIPLE” FOR UNMANNED AIRCRAFT OPERATIONS AT LLANBEDR AERODROME

1. Future Unmanned Air System (UAS) programmes covering larger, more capable platforms will require operational infrastructure and facilities beyond those currently available within the UK. In responding to this need, QinetiQ has identified a solution proposing development of a UAS Initial Operating Capability (IOC)¹ at Llanbedr aerodrome. Critical factors for selecting Llanbedr over other sites are:

- a. **Significantly longer runway length than that at West Wales Airport;**
- b. **Existing infrastructure and airfield facilities which are undergoing substantial enhancement;**
- c. Proximity and access to recognised Danger Areas (EG D201) complete with operational control and proven safety regime;
- d. Ease of access to Danger Area EG D202 via EG D201 thereby maximising utilisation of airspace already provided for UAS operations complete with proven operational control and safety regime.

2. QinetiQ has a teaming agreement with Llanbedr Airfield Estates (LAE), a contractual agreement with SafeSkys Ltd for the provision of ATM and the Long Term Partnering Agreement with the Ministry of Defence (MOD). These agreements, with the addition of a small area of new segregated airspace, will facilitate the operation of unmanned aircraft from Llanbedr aerodrome into EG D201 and EG D202.

¹ IOC is a generic ability to provide capability in support of large unmanned aircraft operations. Each specific programme, operation or platform will have distinct requirements, the detail of which will be accommodated during the planning process.

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3. QinetiQ is pursuing several opportunities for large unmanned operations from Llanbedr. Key work packages are being delivered which will enable a declaration to the market of an IOC this autumn. This work is outlined at Appendix A. One key requirement for IOC is the ability to declare with an element of confidence that the segregated airspace required to access EG D201 from Llanbedr would be feasible and could be made available within the required timeframe. It is envisaged that this airspace would be in the form of a Temporary Danger Area (TDA).

4. Should the ability to operate at Llanbedr prove to be viable longer term (from both an operational and commercial perspective), it is the intention to move to a full operating capability and pursue a permanent airspace change in accordance with the requirements of CAP725. Of significance this would entail the provision of sufficient surveillance radar capability to enable the provision of full air traffic services at Llanbedr.

5. QinetiQ has analysed the potential airspace requirements of current unmanned aircraft likely to operate from Llanbedr and conducted some useful preliminary consultation with key stakeholders in order to produce an appropriate TDA design

6. QinetiQ will continue to manage the consultation process as plans develop in order to achieve the most appropriate airspace solution for all airspace users. The airspace outlined within this document may vary from the airspace requested in any subsequent formal submission. However, the dimensions proposed form the largest TDA likely to be requested and are those on which recent consultation was based. The size, shape and procedures for a TDA will be revisited once a specific UAS operation has been confirmed.

7. The sponsor for the TDA submission is QinetiQ; a specific individual will be nominated with any subsequent formal submission.

8. QinetiQ can be contacted for clarification purposes through the contacts below:

- [REDACTED]
- [REDACTED]

Submission Request

9. In an effort to de-risk IOC, we are requesting an approval in principle of the outline design as described in this document. Our ambition, therefore, is to be in a position to progress to formal submission for a TDA when required with reasonable confidence that it would be approved.

10. Included in this informal submission is a description of the airspace requirement and its dimensions (Appendix B) and details of proposed airspace management and air traffic control procedures (Appendix C). Details of stakeholder engagement undertaken are included at Appendix D.

11. QinetiQ is driving towards a declaration of IOC at Llanbedr by early October 2014. We would, therefore, be grateful for your response to fit that timeframe and would be happy to receive any recommendations and comments at your earliest convenience (if possible by the week ending 10th Oct 2014).



Unmanned Services

References:

- A. Llanbedr MAFIS (Final Draft) dated 5 Sep 2014
- B. Llanbedr Operations NATS RAC Final Draft SI dated 28 Aug 2014
- C. Llanbedr TDA Consultation Document Issue 1 dated 25 Jul 2014
- D. Llanbedr TDA Consultation Document Issue 1.1 dated 8 Aug 2014
- E. Llanbedr TDA Stakeholder Lists and Correspondence Record dated 14 Sep 2014
- F. Llanbedr TDA Consultation Correspondence dated 15 Sep 2014
- G. Notes from the meeting held at RAF Shawbury with MOD representatives on 31 Jul 2014

Appendices:

- A. Supporting Workpackages
- B. Proposed Outline TDA and Co-ordinates
- C. Airspace Management
- D. Stakeholder Consultation

Distribution (soft copies only):



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Appendix A

Supporting Workpackages

A.1 The following table outlines the various workpackages that have been either completed or are still in train. An indication of their status and dates for completion are provided.

Item	Status	Complete or Date for completion
CAA Submission		
Outline TDA Submission for Approval in Principle	Delivered to CAA	Complete
Consultation Documents	Issue 1 – delivered	Complete
	Issue 1.1 - delivered	Complete
Consultation - Summary Spreadsheet of Stakeholders and Responses (including meetings held		Complete to 15 Sep 2014
Correspondence Received and Sent		Complete to 15 Sep 2014
End of Consultation feedback letter to all Stakeholders		In progress – estimate complete by 17 Sep 2014
Supporting Documents		
Llanbedr Manual of Aerodrome Flight Information Service (MAFIS)	Final Draft delivered	To be completed with formal TDA submission. Completion requires MAFIS insert for specific platform
Aerodrome Manual	Issued	Complete
Aberporth Range Air Control (RAC) - NATS Supplementary Instruction	Final Draft delivered	Completion pending RAC safety analysis / risk assessment
Aberporth Range Air Control (RAC) - NATS Temporary Operating Instruction	N/A	To be completed for specific platform
Letter of Agreement Llanbedr/Valley LOA	Draft available, sent for comment to RAF Valley	Prior to flight
Letter of Agreement Llanbedr/Aberporth RAC	Draft available, sent for comment to RAC	Prior to flight
Capability Enhancements		
Llanbedr Infrastructure Programme – Large programme of works to ATC Tower and airfield.	Ongoing	To be completed by IOC – Tower re-fit photos to be included on disc
Regulatory Process		
CAA Inspector ATS (Engineering) - Dale Blanck for Equipment Approval	Inspection complete 4 th Sep 2014	Passed
CAA visit to determine Greenfield Dispensation for FISO operation (Andy Hughes)		Scheduled for 25 th Sep 2014
ANSP letter of designation		Submitted
ANO approval for Air Ground Radio / request for changes to radio licence		Submitted

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Appendix B

Proposed Outline TDA and Co-ordinates

Airspace Dimensions

B.1 Three separate volumes of airspace are proposed, which together will be established in the form of a TDA. It is proposed that the 3 areas would be referenced under the same TDA identity, but taking a separate suffix (e.g. A, B & C). In this document the 3 volumes are referenced Area A, Area B and Area C. The Areas are outlined in Figure 1. The co-ordinates for the proposed TDA are at paragraphs A.8 – A.12.

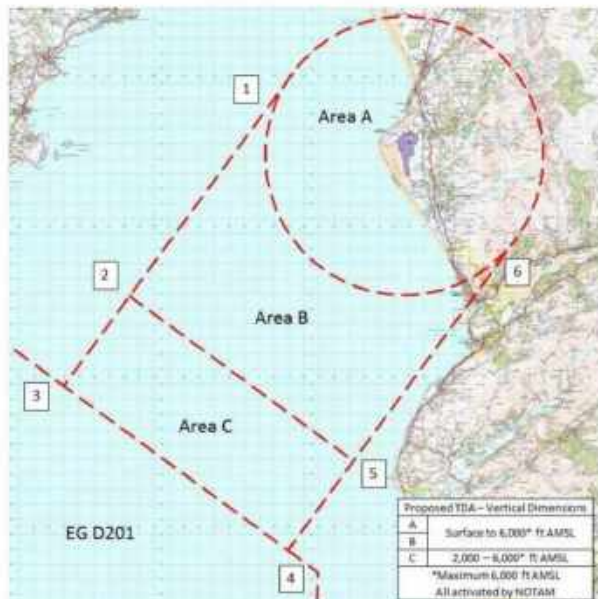


Figure 1 - Proposed TDA (Points 1 – 6 as at paragraphs B.8 – B.12)

B.2 Area A is located over Llanbedr airfield and has a radius of 5 nautical miles (NM), centred on the Llanbedr Aerodrome Reference Point, and extends from surface level to a maximum upper level of 6,000 ft above mean sea level (AMSL). The dimensions of Area A could be subject to change once a particular unmanned operation has been identified. For example it could be reduced in size to a 3 or 4 NM radius and/or it could be truncated down its eastern edge to exclude the high ground from the TDA.

B.3 Areas B and C together form a transit corridor joining Area A to EG D201 and are wholly located over the sea. Area B is approximately 5 NM long and Area C is 4 NM long; both are 10 NM wide. Area B extends from surface level to a maximum upper level of 6,000 ft AMSL, whilst Area C extends from 2,000 ft AMSL to a maximum upper level of 6,000 ft AMSL.

B.4 The establishment of the proposed TDA will provide the required volume of segregated airspace necessary for a UAS to either operate within 5 NM of Llanbedr aerodrome or to access EG D201 and EG D202. An aviation chart is incorporated at the Figure 2 with a plan view of the airspace at Figure 3.

B.5 To ensure maximum Flexible Use of Airspace, the proposed Areas may be independently activated (e.g. Areas B and C will not be activated if the activity is planned to remain within 5 NM of Llanbedr

aerodrome). In addition any Area will only be activated up to the maximum altitude for a specific activity, which could in practice be less than 6,000 ft AMSL.

B.6 None of the Areas of the proposed TDA will be permanently active. They will only be activated by NOTAM, when unmanned flying is due to take place.

Proposed TDA Co-ordinates

B.7 The proposed TDA 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. Points 1 – 6 in the tables below are marked on the map at Figure 2.

B.8 Area A is a circle, radius 5 NM, centred on 524818N 0040739W. Its vertical dimensions are from surface level to 6,000 ft AMSL.

B.9 Area B is bounded by the points:

pt	latitude	longitude
1	525108N	0041426W
2	524258N	0042339W
5	523719N	0041006W
6	524528N	0040052W
thence clockwise along an arc, radius 5 NM, centred on 524818N 0040739W to		
1	525108N	0041426W

B.10 Area B's vertical dimensions are from surface level to 6,000 ft AMSL.

B.11 Area C is bounded by the points:

pt	latitude	longitude
2	524258N	0042339W
3	523940N	0042722W
4	523402N	0041349W
5	523719N	0041006W
2	524258N	0042339W

B.12 Area C's vertical dimensions are from 2,000 ft to 6,000 ft AMSL.

Proposed TDA Overlaid on Airspace Chart and in Plan View



Figure 2; Proposed TDA overlaid on Airspace Chart

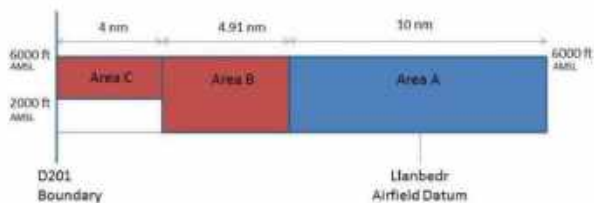


Figure 3; Proposed TDA – plan view

Appendix C

Airspace Management and Air Traffic Management

Airspace Management

C.1 Proven procedures will be adopted to ensure that the airspace is activated and notified as and when required. This will involve appropriate NOTAM action being taken by Range Control at Aberporth Range. Information on the current status of the airspace will be available from Llanbedr Aerodrome Flight Information Services (AFIS), MOD Aberporth Range Air Control (RAC) and London Flight Information.

C.2 It is anticipated that flying will take place Monday – Friday during daylight hours only. The Manual of Aerodrome Flight Information Services (Part 2) [Ref A] will specify a minimum visibility and cloud ceiling below which flying may not take place. These minima will not be fixed, but will be variable and tailored to each individual campaign's requirement and will largely depend on the size of the aircraft as well as the design of the UAS. The overall intention is to ensure the safety of the operation as well as the safety of other airspace users in the vicinity. For this reason, the minima will be set in order to ensure as far as is reasonably practicable that the Aerodrome Flight Information Service Officer (AFISO) can maintain visual contact with the unmanned aircraft whilst it is in the immediate vicinity of the airfield.

C.3 It is envisaged that the majority of the UAS operational purpose will be to access the established segregated airspace of EG D201 and EG D202 and thereby operations around the airfield will be in the minority normally constrained to takeoff and landing.

C.4 The duration of each flight will be dependent on the UAS type and the task being undertaken and undoubtedly there are likely to be peaks and troughs in activity.

C.5 The MOD Danger Area Airspace Manager (DAAM), Wg Cdr Neil Hope, has indicated that he is willing to be the Danger Area Sponsor for the TDA should the airspace be approved.

Air Traffic Management

C.6 Llanbedr AFIS will be manned from takeoff to landing for all UAS operations within the proposed TDA. An AFISO service will be provided by SafeSkys Ltd within Area A, which will enable local airspace users to obtain information on the current status of the TDA and on any activity within Area A. MOD Aberporth RAC will be manned when the UAS is expected to transit Areas B and C and onwards to operate in EG D201 or further into EG D202.

C.7 When in Areas B and C, the UAS will be under the control of MOD Aberporth RAC who will ensure that safe separation is maintained at all times from all other airspace users. Instructions to the unmanned air vehicle (UAV) Pilot from ATC will be mandatory. It is anticipated that the UAV will be equipped with a transponder. There are no plans to allocate a dedicated squawk for UAVs, consequently UAVs operating in the proposed TDA will be allocated an appropriate squawk when operating in Areas A - C.

C.8 The operating crew is responsible for monitoring flight systems and communicating directly with Llanbedr AFIS or MOD Aberporth RAC. In addition, the operating crew is to ensure that the unmanned aircraft remains within the confines of the segregated airspace during both normal operation and in the event of any routine emergency.

C.9 SafeSkys Ltd has approached the CAA for guidance regarding the provision of a Danger Area Crossing Service (DACS) within Area A. Whilst this may not be possible due to the limitations of the AFISO's licence, as a minimum Llanbedr AFIS will provide a Danger Area Activity Information Service (DAAIS). A

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DACS will be available from MOD Aberporth RAC for Areas B and C. Initially crossing clearances for these Areas will be issued to aircraft only when both Areas are clear of unmanned aircraft, but it is thought this may be relaxed with time and experience. Draft procedures for Llanbedr AFIS and MOD Aberporth RAC are outlined in the MAFIS [Ref A] and the RAC Draft Supplementary Instruction [Ref B] respectively. A DAAIS will be available from Llanbedr AFIS, MOD Aberporth RAC or London Flight Information

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Appendix D

Stakeholder Consultation

D.1 Any additional segregated airspace is likely to have some impact on the general aviation community. However, the planned capabilities to be put in place (FISO and ATC service) are designed to ensure that any such impact is kept to a minimum. As has already been highlighted, the TDA will not be permanent; it will only be activated for UAS activity. In addition the segregated airspace will be released at the earliest opportunity, once operations are complete.

D.2 Whilst there is no formal requirement for consultation for a TDA, a period of stakeholder consultation was carried out during the dates 25 July – 31 August 2014. Issue 1 of the consultation material [Ref C] was distributed on 25 July 2014. The TDA design was amended after a meeting with the MOD and Issue 1.1 [Ref D] was distributed on 8 August 2014 (additionally incorporating a wider stakeholder list).

D.3 The full list of consulted stakeholders is in the tables at Ref E, along with dates of all correspondence sent and received. The spreadsheets indicate brief details of issues raised and an indication of whether the respondent fell into one of the 3 categories: for, against or neutral. A specific statement of approval or disapproval was required for the first two categories. Most of the respondents expressed concerns about specific aspects of the proposal itself or the operation of unmanned aircraft, without a specific expression for or against. These were annotated as neutral.

D.4 A total of 11 responses were received during the consultation. QinetiQ has responded directly to all stakeholders who commented and will continue to engage with any interested parties.

D.5 All related correspondence has been compiled into one PDF document at Ref F (each email or attachment is annotated by hand with the reference number incorporated on the tables at Ref E). QinetiQ intends to produce a short Feedback to Consultation letter which will be forwarded to all identified stakeholders (and the CAA) containing a summary of comments received and feedback given.

D.6 The main objection came from the MOD, via the Defence Airspace and Air Traffic Management (DAATM) organisation. During the consultation period, QinetiQ met with the MOD DAAM and representatives of 22 Group and RAF Valley. Notes from this meeting are at Ref G. It was acknowledged that 4 Flying Training School (FTS) would be subjected to some flying restrictions as a result of the implementation of the proposed TDA and that unless a means of transiting from North to South over the sea was found there was likely to be an increase in the risk of Mid-Air Collision for RAF Valley aircraft. In an effort to reduce this risk several options were discussed and an amendment made to the original design.

D.7 QinetiQ's response to the MOD's objection is included at Ref F but it is worth stressing that the forecast effect on MOD flying would be temporary in nature. The ultimate ambition is for Llanbedr to move to a final operating capability where full air traffic services will be provided at Llanbedr utilising surveillance radar, thereby enhancing the service available to MOD operators.

D.8 QinetiQ intends to keep the dialogue open with the MOD (RAF Valley and the DAATM in particular) in order to try to identify any other means of reducing the impact on the MOD's operation. Representatives from QinetiQ and LAE will attend the Wales and West Midlands Airspace Symposium at RAF Valley on 6th Nov 2014, and may provide a presentation regarding future operations at Llanbedr if appropriate (agenda item to be confirmed). QinetiQ is also hoping to schedule a further meeting with representatives from RAF Valley prior to the Symposium, once initial comments have been received from you regarding this submission.

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D.9 A formal meeting was held at Llanbedr aerodrome for local civic offices and officers of the Snowdonia National Park to learn more about the proposed TDA for unmanned flying as well as proposed development for Spaceport. The local Member for Parliament, Lord Dafydd Elis Thomas, expressed his support for the development of the aerodrome; his response is included with the consultation record.

D.10 Finally a number of stakeholders were identified late in the process. The material has been forwarded to them and QinetiQ will be pleased to consider and respond to any comments received.

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