St Athan ILS ACP Step 2A

Options Development

Date: 19th July 2019
Author:
Revision: 1
Osprey Ref: 71322 002

The Hub, Fowler Avenue, Farnborough Business Park, Farnborough, GU14 7JP
01420 520200 / enquiries@ospreycsl.co.uk
Registered in England and Wales under No: 06034579

Document Details

Reference	Description
Document Title	St Athan ILS ACP Stage 2A
	Design Principles
Document Ref	71322 002
Issue	1
Date	19th July 2019
Client Name	Welsh Government Aviation Team
Classification	

Issue	Amendment	Date
Issue 1	First formal issue	19th July 2019

Approval Level	Authority	Name
Author	Osprey CSL	
Reviewer	Osprey CSL	

OSPREY
CONSULTING SERVICES

Table of Contents

Table of Figures

OSPREY
CONSULTING SERVICES

1 Options Development

To enable the publication of the CAA-approved St Athan ILS procedures in the UK AIP as detailed in the Statement of Need (SoN), a scaled proposal with a single option has been developed to meet a combined Define, Develop and Assess Gateway in July 2019.

1.1 Background and Rationale

The sole aim of this proposed airspace change is to enable the publication of the previous CAA-approved St Athan ILS procedures, previously published in the Mil AIP, in the UK AIP.

Recognising this, the CAA has agreed[1] to a scaled ACP submission with a combined Define and Develop & Assess Gateway in July 2019. The sponsor remains committed to the CAP 1616 process and the CAA's requirements for transparency, consistency and proportionality, and this application takes into account all of the required elements. However, given the limited nature of the proposal, it is argued that there is neither the latitude nor the need to develop conventional multiple Design Principles that would influence the desired solution. No requirement has been identified for variance from the existing ILS procedures and therefore the Design Principles, though assessed in the Step 1B submission against a range of operational, technical, environmental and commercial criteria, were inevitably limited. Nevertheless, it is the intention in this Step 2A submission to demonstrate that:

- All the possible options have been identified;
- The respective options have been evaluated in a fair and consistent manner, and
- The design options have been evaluated and are compliant with the required technical criteria.

In developing the preferred option, the sponsor seeks to reinforce the evidence that the proposal will result in no recognisable change for stakeholders.

1.2 Extract from Statement of Need (SoN)

The full SoN, submitted 2nd July 2018, is available on the airspace portal[2], but the following extract describes the requirement and the limited scope of the proposed change:

The change to the ILS being published in the UK Civil AIP will require no changes to the ILS procedure, its track or usage. There will be no changes to the airspace, currently

[1] Email [redacted] (CAA) to [redacted] (Osprey) RE: 71299 - St Athan ILS Procedures ACP-2018-35 (sent 13:18 on Fri 14/06/2019)
[2] https://airspacechange.caa.co.uk/PublicProposalArea?pID=81

Class D controlled by Cardiff Approach, and no change to procedures in respect of vectoring.

Airspace

The current airspace, which will not change, is classified as Class D and Class G. The approach commences in Class G airspace and enters the Cardiff CTA at 8 NM then enters the Cardiff CTR. The Airspace is operated by NATS Cardiff on behalf of the Welsh Government (WG) under a contract with Cardiff Airport. Aerodrome control is provided by SERCO on behalf of the WG.

Current Air Traffic Control Situation

Aircraft wishing to fly the ILS at St Athan initially call Cardiff approach and are provided with a radar service and vectors to the ILS. Following the transfer of the Aerodrome from MAA oversight to CAA regulation there will be no changes to the service provided or the tracks flown.

Nothing about the procedure or the track or heights flown will change. Also, the aircraft mix and number of approaches as a percentage of the total movements at St Athan will not change. The lead customer for the ILS is the MROs at St Athan providing economic growth and significant employment in the area.

There are no additional, safety, operational, technical or economic factors associated with the change.

The limited scope of the change proposed in the SoN is reinforced in the Step 1B submission and confirms there will be no change to:

- Design of the procedures;
- Airspace design;
- Airspace classification;
- Air traffic control procedures associated with the ILS procedures;
- The ground track and heights of aircraft flying the ILS procedure;
- The type, volume, frequency and distribution of aircraft movements at the airport.

Consequently, the Step 2A is scaled proportionately as described below.

1.3 Scaling Stage 2 Step 2A

In Options Development, the change sponsor is required to develop one or more options that address the SoN, aligned with the defined design principles. As described in the submission for Step 1B, there is no change to the ILS procedure or airspace design, or associated operational procedures and therefore there is no realistic scope in the proposal for multiple design options. Nonetheless, it is possible to assess any options against the Statement of Need.

The sponsor is committed to ensuring that, while the process may be scaled in a proportionate manner, its application remains true to the spirit and objectives of CAP 1616. The sponsor has therefore considered the scaling of Step 2A from a number of perspectives, including the following:

1.3.1 Ensuring any potential impact is fully understood

While recognising that CAP 1616 Appendix F formally sits in Stage 4 of the airspace change process (and will be repeated in Stage 4), an analysis has been undertaken at Annex 1 to this document to illustrate the minimal impact of the proposal. For example, air traffic control procedures are already in place and will not change, so there are no interdependencies or issues to resolve with neighbouring ANSPs and there is no requirement for simulations or operational trials.

1.3.2 Any potential impact on airspace has been considered

No change is proposed to airspace layout, design or classification or route structures. For example, Figure 1 is an extract from an existing UK AIP published chart that shows the St Athan ILS extended centreline (see Annex A2 Figure 4, the UK AIP for Cardiff Airport Control Zone and Area Control Chart – Local Flying and Entry Exit procedures (AD 2-EGFF-4-1)

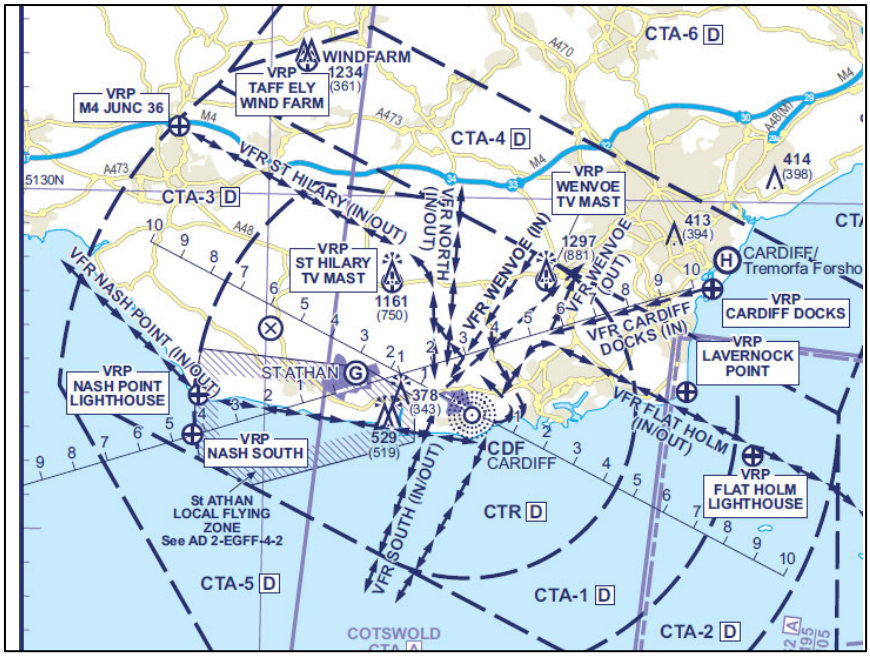

Figure 1 UK AIP AD 2.EGFF-4-1 extract showing St Athan ILS extended centreline

1.3.3 Any potential operational impacts have been considered

- There would be no change to the ILS procedures track or slope (see Annex A1 Figures 3 and 4);
- There would be no change to the number or type of aircraft movements, ATC procedures or ATCO workload, therefore these factors have not been individually assessed;
- Similarly, there would be no impact on other airspace users including IFR general air traffic, operational air traffic or VFR General Aviation, or on procedures or capacity at adjacent airports. Neither would there be an impact on supporting infrastructure or resources;
- If approved, in accordance with the indicative timeline, the change will be promulgated through the AIRAC cycle to allow users sufficient time to plan for the change;

1.3.4 Any potential environmental impacts have been considered

As no environmental change results from the proposal and no change for people on the ground, assessments of noise impacts, CO2 emissions, local air quality and tranquillity have not been conducted.

1.3.5 Engagement of Stakeholders

Routinely during Step 2A, stakeholders are engaged to test the list of options developed during this step. However, as the analysis in this section demonstrates, the proposed change has no impact on stakeholders nor would they influence the choice of options for an already established procedure, Step 2A stakeholder engagement has only been conducted with the MRO companies based at St Athan (see Annexes 4 and 5).

Further engagement is planned in advance of formal consultation (Stage 3), including with local Air Navigation Service Providers (ANSPs), adjacent airports (Cardiff and Bristol) and the Cardiff Airport Consultative Committee. The latter because the St Athan ILS procedures are almost wholly contained within controlled airspace managed by Cardiff Airport.

1.4 Potential Options Considered

Looking at all of the possibilities, five potential options to address the removal of the St Athan ILS procedures from the Mil AIP have been considered:

1.4.1 Permanently withdraw the ILS

This option is discounted because it is considered disproportionate; the ILS equipment remains serviceable and, when published in the UK AIP, would be available to all operators at St Athan, most importantly MRO customers. If withdrawn, MRO customers have indicated that they would be reluctant to operate to a VFR-only airport with the increased risk of diversions. The responses at Annex 4 and Annex 5, from [redacted] and [redacted] respectively, St Athan's resident MRO companies, states unequivocally from their perspective the negative impact of the unavailability of the ILS procedures. This option does not meet the Statement of Need and could result in increased risk associated with increased cockpit and controller workload. Although non-compliant, as the 'worst case' option it will be taken forward to Step 2B for comparative purposes.

1.4.2 Introduce RNAV procedure instead of ILS through a full Level 1 airspace change application

This option is discounted as there is a current identified requirement for ILS procedures. The introduction of RNAV procedures to replace ILS procedures would involve a lengthy, expensive change application that would not be proportionate and would not meet the SoN, insofar as the proposal does not seek any change to aircraft's heights, track over the ground, or how the procedure is employed. Equally MRO operators, some of whom will be delivering aircraft to St Athan for recycling, may not necessarily be able to fly RNAV approaches. This option is disproportionate, does not fulfil the SoN and actually introduces new project issues and risks whilst changing the environmental impact from the accepted status quo. It will not be taken forward in Step 2B;

1.4.3 Publish the ILS procedures in the UK AIP as a Level 0 change

This option has been discounted by the CAA as the proposal is greater than a change in nomenclature to the UK AIP. This option will not be taken forward in Step 2B;

1.4.4 Publish the ILS procedures in the UK AIP following a full, conventional CAP 1616 process

This option is discounted as it would be too lengthy, costly and disproportionate. WG would have difficulty justifying the expenditure to conduct a full application as there is no change to the procedures. Furthermore, the CAA has agreed to a scaled approach for the proposal. This option will not be taken forward in Step 2B;

1.4.5 Publish the ILS procedures in the UK AIP following a scaled, proportionate and accelerated application of CAP 1616

Publish the ILS procedures in the UK AIP following a scaled, proportionate and accelerated application of CAP 1616. This is the sponsor's preferred option and this approach has been agreed by the CAA.

1.5 Conclusion

In accordance with the requirements in paragraph E18 of CAP1616, when measured against best practice guidance, the proposed change is shown to:

- Be acceptably safe, as there is no substantive change to the existing CAA-approved procedure;
- Minimise emissions, noise and the number of people overflown, as there is no change to the track or heights flown by aircraft flying the procedures;
- Maintain operational performance and capability, as there is:
    - No change to the 'fly-ability' of the procedure
    - No change to containment within CAS
    - No change to track miles flown
    - No changes to ATC procedures
    - Predictability of tracks
    - No change in the probability of vectoring by ATC.

A1 St Athan ILS Proposal – analysis against CAP 1616 Appendix F

Airspace description requirements

	The proposal should provide a full description of the proposed change including the following:	Description for this proposal
a	The type of route or structure; for example, airway, UAR, Conditional Route, Advisory Route, CTR, SIDs/STARs, holding patterns, etc	ILS procedure
b	The hours of operation of the airspace and any seasonal variations	No change, 0900-1700 (0800-1600)
c	Interaction with domestic and international en-route structures, TMAs or CTAs with an explanation of how connectivity is to be achieved. Connectivity to aerodromes not connected to CAS should be covered	ATC provided by NATS Cardiff. No change
d	Airspace buffer requirements (if any). Where applicable describe how the CAA policy statement on 'Special Use Airspace – Safety Buffer Policy for Airspace Design Purposes' has been applied.	Not applicable
e	Supporting information on traffic data including statistics and forecasts for the various categories of aircraft movements (passenger, freight, test and training, aero club, other) and terminal passenger numbers	No change, statistics for aircraft movement number and type are analysed in submission Step 2B
f	Analysis of the impact of the traffic mix on complexity and workload of operations	No change
g	Evidence of relevant draft Letters of Agreement, including any arising out of consultation and/or airspace management requirements	No change
h	Evidence that the airspace design is compliant with ICAO Standards and Recommended Practices (SARPs) and any other UK policy or filed differences, and UK policy on the Flexible Use of Airspace (or evidence of mitigation where it is not)	A detailed assessment of the procedures has been conducted against Pans-Ops Doc 8168 and UK CAA requirements

i	The proposed airspace classification with justification for that classification	No change
j	Demonstration of commitment to provide airspace users equitable access to the airspace as per the classification and where necessary indicate resources to be applied or a commitment to provide them in line with forecast traffic growth. 'Management by exclusion' would not be acceptable	No change
k	Details of and justification for any delegation of ATS	Not applicable

Safety assessment – No change

Operational impact

	An analysis of the impact of the change on all airspace users, airfields and traffic levels must be provided, and include an outline concept of operations describing how operations within the new airspace will be managed. Specifically, consideration should be given to:	**Evidence of compliance/ proposed mitigation**
a	Impact on IFR general air traffic and operational air traffic or on VFR General Aviation (GA) traffic flow in or through the area	No change
b	Impact on VFR operations (including VFR routes where applicable);	No change
c	Consequential effects on procedures and capacity, i.e. on SIDs, STARs, and/or holding patterns. Details of existing or planned routes and holds	No change
d	Impact on aerodromes and other specific activities within or adjacent to the proposed airspace	No change
e	Any flight planning restrictions and/or route requirements	No change

Supporting infrastructure/resources

	General requirements	**Evidence of compliance/ proposed mitigation**
a	Evidence to support RNAV and conventional navigation as appropriate with details of planned availability and contingency procedures	No Change

	General requirements	Evidence of compliance/ proposed mitigation
b	Evidence to support primary and secondary surveillance radar (SSR) with details of planned availability and contingency procedures	No Change
c	Evidence of communications infrastructure including R/T coverage, with availability and contingency procedures	No Change
d	The effects of failure of equipment, procedures and/or personnel with respect to the overall management of the airspace must be considered	No Change
e	Effective responses to the failure modes that will enable the functions associated with airspace to be carried out including details of navigation aid coverage, unit personnel levels, separation standards and the design of the airspace in respect of existing international standards or guidance material	No Change
f	A clear statement on SSR code assignment requirements	No Change
g	Evidence of sufficient numbers of suitably qualified staff required to provide air traffic services following the implementation of a change	No Change

Airspace and infrastructure

	General requirements	Evidence of compliance/ proposed mitigation
a	The airspace structure must be of sufficient dimensions with regard to expected aircraft navigation performance and manoeuvrability to fully contain horizontal and vertical flight activity in both radar and non-radar environments	No Change
b	Where an additional airspace structure is required for radar control purposes, the dimensions shall be such that radar control manoeuvres can be contained within the structure, allowing a safety buffer. This safety buffer shall be in accordance with agreed parameters as set down in CAA policy statement 'Safety Buffer Policy for Airspace Design Purposes Segregated Airspace'. Describe how the safety buffer is applied, show how the safety buffer is portrayed to the relevant parties, and provide the required agreements	No Change / Not applicable, the proposal does not include additional airspace.

	General requirements	Evidence of compliance/ proposed mitigation
	between the relevant ANSPs/airspace users detailing procedures on how the airspace will be used. This may be in the form of Letters of Agreement with the appropriate level of diagrammatic explanatory detail.	
c	The Air Traffic Management system must be adequate to ensure that prescribed separation can be maintained between aircraft within the airspace structure and safe management of interfaces with other airspace structures	No Change
d	Air traffic control procedures are to ensure required separation between traffic inside a new airspace structure and traffic within existing adjacent or other new airspace structures	No Change
e	Within the constraints of safety and efficiency, the airspace classification should permit access to as many classes of user as practicable	No Change
f	There must be assurance, as far as practicable, against unauthorised incursions. This is usually done through the classification and promulgation	No Change
g	Pilots shall be notified of any failure of navigational facilities and of any suitable alternative facilities available and the method of identifying failure and notification should be specified	No Change
h	The notification of the implementation of new airspace structures or withdrawal of redundant airspace structures shall be adequate to allow interested parties sufficient time to comply with user requirements. This is normally done through the AIRAC cycle	Procedure publication will be through the AIRAC cycle
i	There must be sufficient R/T coverage to support the Air Traffic Management system within the totality of proposed controlled airspace	No Change
j	If the new structure lies close to another airspace structure or overlaps an associated airspace structure, the need for operating agreements shall be considered	No Change
k	Should there be any other aviation activity (low flying, gliding, parachuting, microlight site, etc) in the vicinity of the new airspace structure and no suitable operating agreements or air traffic control procedures can be devised,	No Change

	General requirements	Evidence of compliance/ proposed mitigation
	the change sponsor shall act to resolve any conflicting interests	

	ATS route requirements	Evidence of compliance/ proposed mitigation
a	There must be sufficient accurate navigational guidance based on in-line VOR/DME or NDB or by approved RNAV derived sources, to contain the aircraft within the route to the published RNP value in accordance with ICAO/Eurocontrol standards	No change
b	Where ATS routes adjoin terminal airspace there shall be suitable link routes as necessary for the ATM task	Not applicable, the proposal does not change ATS routes
c	All new routes should be designed to accommodate P-RNAV navigational requirements	Not applicable, the design is not new

	Terminal airspace requirements	Evidence of compliance/ proposed mitigation
a	The airspace structure shall be of sufficient dimensions to contain appropriate procedures, holding patterns and their associated protected areas	No change
b	There shall be effective integration of departure and arrival routes associated with the airspace structure and linking to designated runways and published instrument approach procedures (IAPs)	Purpose of the proposal is to publish IAPs
c	Where possible, there shall be suitable linking routes between the proposed terminal airspace and existing en-route airspace structure	No change
d	The airspace structure shall be designed to ensure that adequate and appropriate terrain clearance can be readily applied within and adjacent to the proposed airspace	No change, existing procedure design is CAA-approved
e	Suitable arrangements for the control of all classes of aircraft (including transits) operating within or adjacent to	No change

	Terminal airspace requirements	Evidence of compliance/ proposed mitigation
	the airspace in question, in all meteorological conditions and under all flight rules, shall be in place or will be put into effect by the change sponsor upon implementation of the change in question (if these do not already exist)	
f	The change sponsor shall ensure that sufficient visual reference points are established within or adjacent to the subject airspace to facilitate the effective integration of VFR arrivals, departures and transits of the airspace with IFR traffic	Not applicable
g	There shall be suitable availability of radar control facilities	No change
h	The change sponsor shall, upon implementation of any airspace change, devise the means of gathering (if these do not already exist) and of maintaining statistics on the number of aircraft transiting the airspace in question. Similarly, the change sponsor shall maintain records on the numbers of aircraft refused permission to transit the airspace in question, and the reasons why. The change sponsor should note that such records would enable ATS managers to plan staffing requirements necessary to effectively manage the airspace under their control	Not applicable, the proposal does not seek any change to airspace
i	All new procedures should, wherever possible, incorporate Continuous Descent Approach (CDA) profiles after aircraft leave the holding facility associated with that procedure	No change

	Off-route airspace requirements	Evidence of compliance/ proposed mitigation
a	If the new structure lies close to another airspace structure or overlaps an associated airspace structure, the need for operating agreements shall be considered	No change
b	Should there be any other aviation activity (military low flying, gliding, parachuting, microlight site etc) in the vicinity of the new airspace structure and no suitable operating agreements or air traffic control procedures can be devised, the change sponsor shall act to resolve any conflicting interests	No change

Environmental assessment

	Theme	Content	Evidence of compliance/ proposed mitigation
a	WebTAG analysis	Output and conclusions of the analysis (if not already provided elsewhere in the proposal)	WebTAG analysis has not been undertaken, as it is considered disproportionate given the limited nature of the change
b	Assessment of noise impacts (Level 1/M1 proposals only)	Consideration of noise impacts, and where appropriate the related qualitative and/or quantitative analysis, including whether the anticipated noise impact meets the criteria for a proposal to be called-in by the Secretary of State (paragraph 5(c) of Direction 6 of the Air Navigation Directions 2017) If the change sponsor expects that there will be no noise impacts, the rationale must be explained	No change
c	Assessment of CO2 emissions	Consideration of the impacts on CO2 emissions, and where appropriate the related qualitative and/or quantitative analysis If the change sponsor expects that there will be no impact on CO2 emissions impacts, the rationale must be explained	No change
d	Assessment of local air quality (Level 1/M1 proposals only)	Consideration of the impacts on local air quality, and where appropriate the related qualitative and/or quantitative analysis If the change sponsor expects that there will be no impact on local air quality, the rationale must be explained	No change
e	Assessment of impacts upon Tranquillity (Level 1/M1 proposals only)	Consideration of any impact upon tranquillity, notably on Areas of Outstanding Natural Beauty or National Parks, and where appropriate the related qualitative and/or quantitative analysis	No change

	Theme	Content	Evidence of compliance/ proposed mitigation
		If the change sponsor expects that there will be no tranquillity impacts, the rationale must be explained	
f	Operational diagrams	Any operational diagrams that have been used in the consultation to illustrate and aid understanding of environmental impacts must be provided	Mil AIP procedures and Cardiff Control Zone and Control Area Chart are reproduced at Annexes 2 and 3
g	Traffic forecasts	10-year traffic forecasts, from the anticipated date of implementation, must be provided (if not already provided elsewhere in the proposal	No change, MRO traffic forecasts will remain unchanged
h	Summary of environmental impacts and conclusions	A summary of all of the environmental impacts detailed above plus the change sponsor's conclusions on those impacts	

A2 St Athan ILS Approaches

A2.1 ILS/DME Rwy 25 (UK Mil AIP)

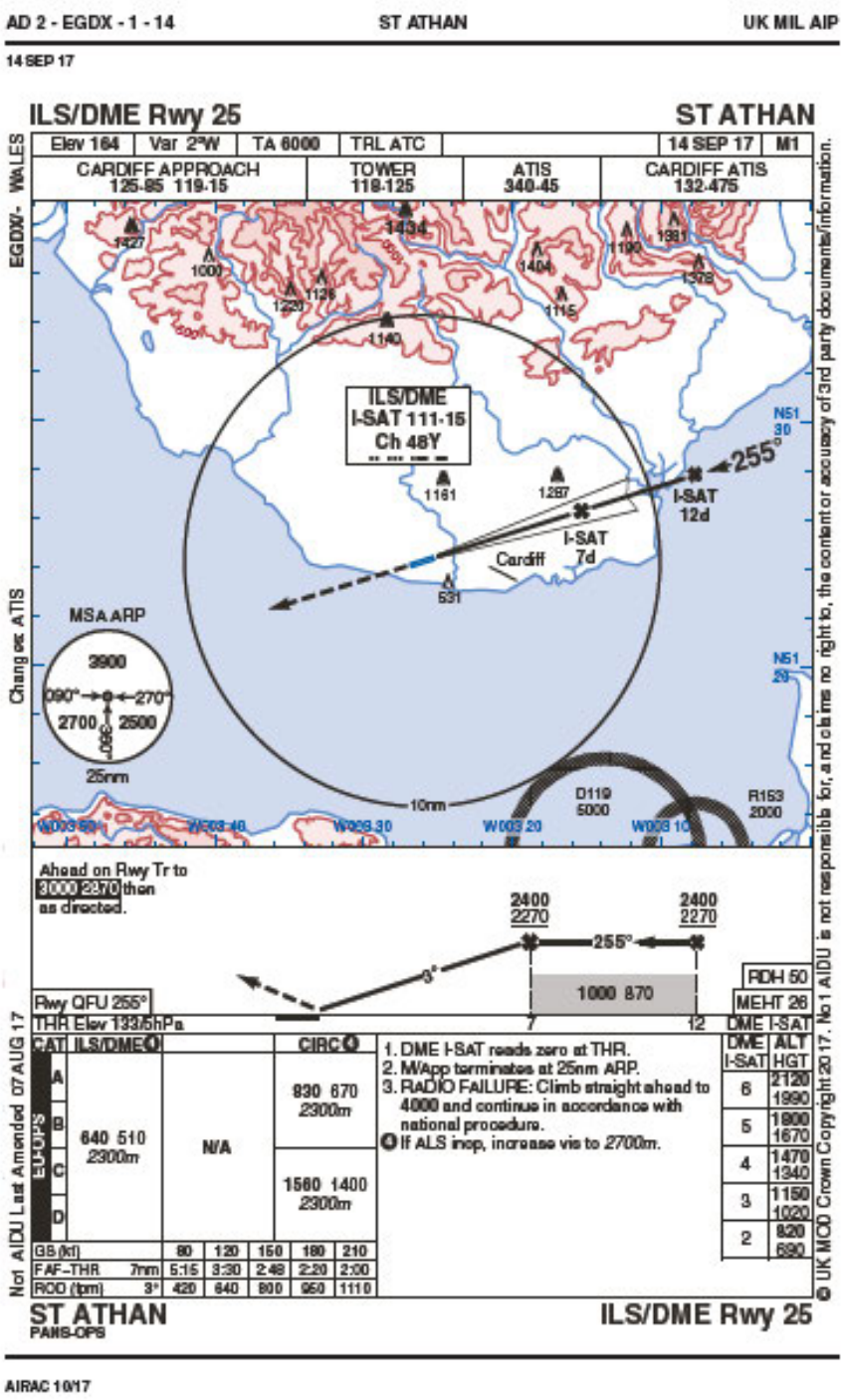

Figure 2 ILS/DME Rwy 25 (UK Military AIP)

A2.2 LOC/DME Rwy 25 (UK Mil AIP)

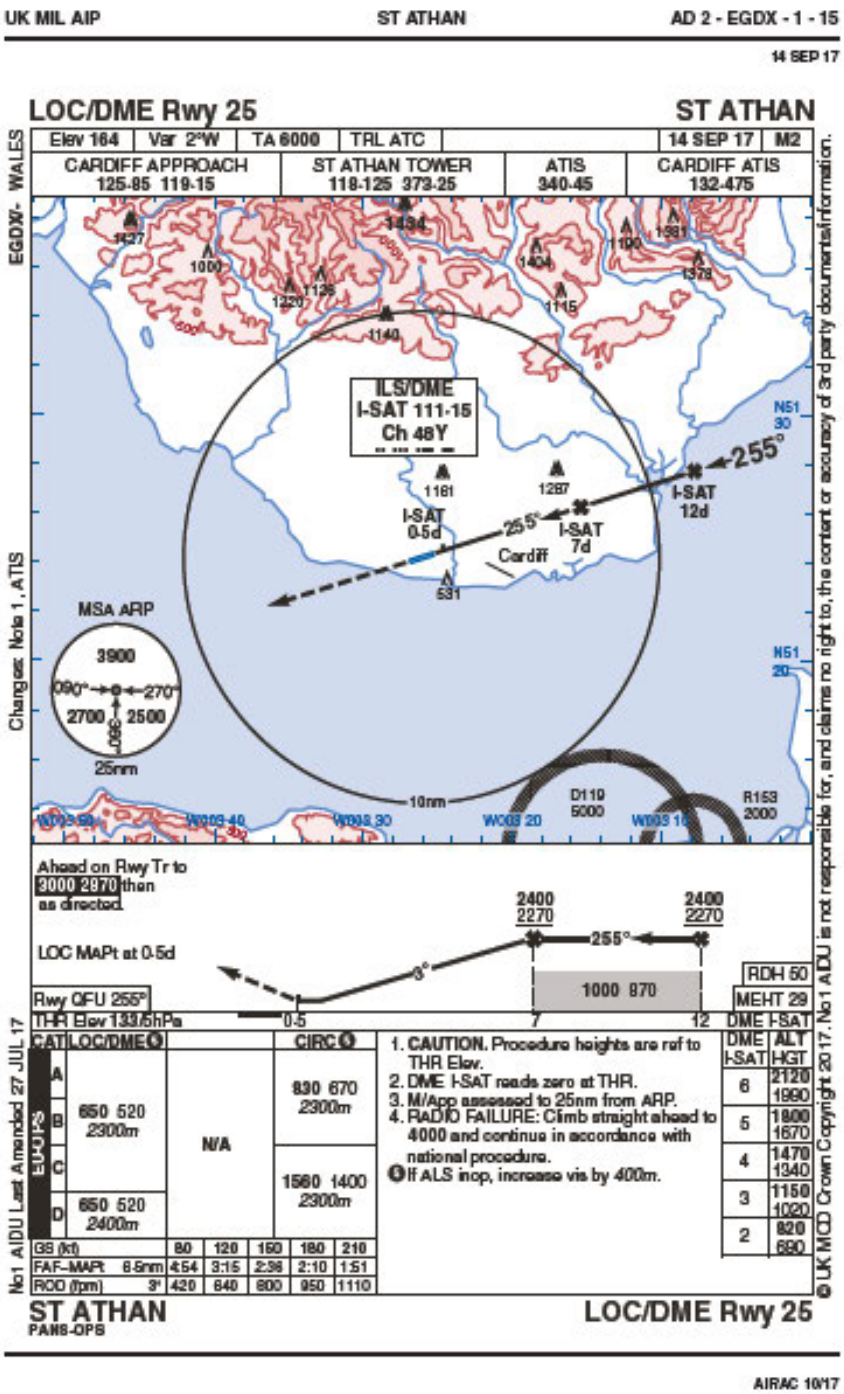

Figure 3 LOC/DME Rwy 25 (UK Military AIP)

A3 UK AIP – Cardiff Control Zone and Control Area Chart

UK AIP Published Airspace encompassing St Athan ILS procedures (reference AD 2.EGFF-4-1 dated 3 Jan 2019)

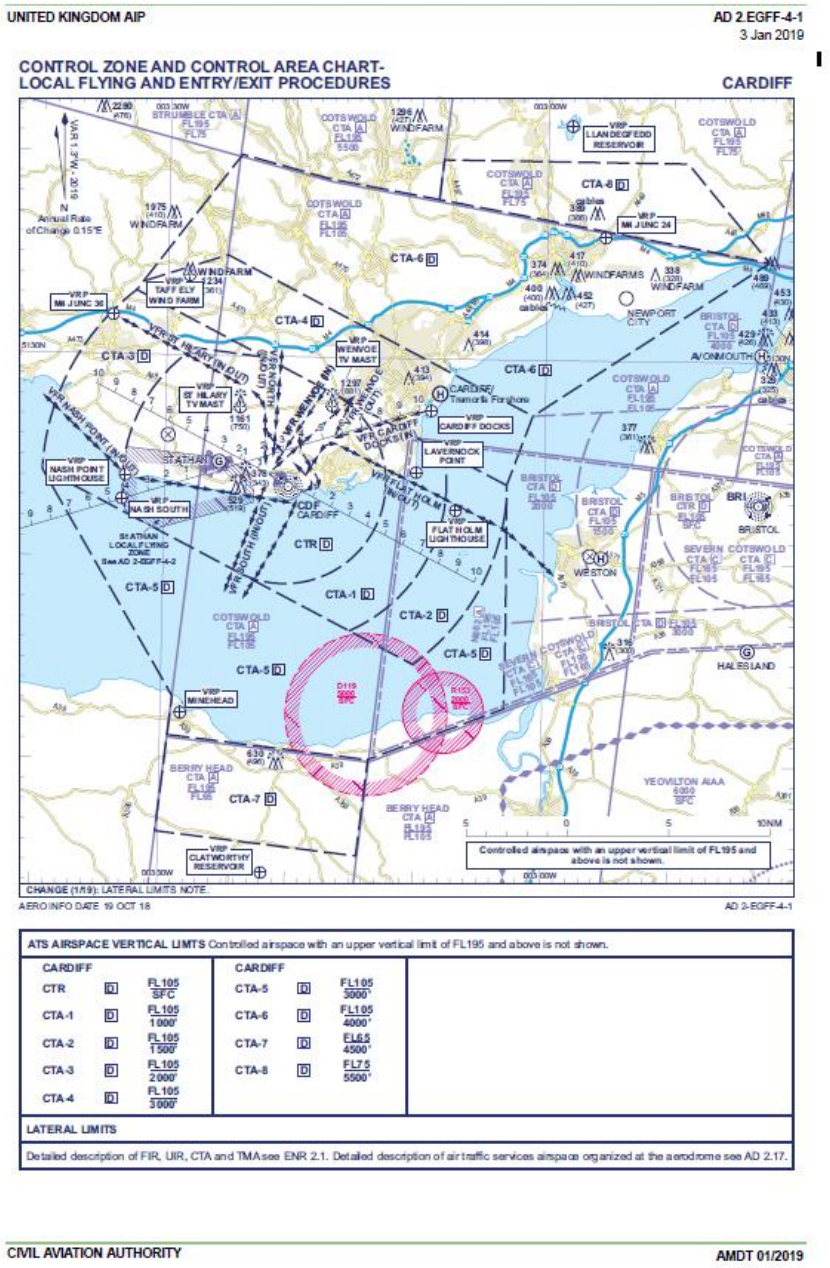

Figure 4 Control Zone and Control Area Chart – Local Flying and Entry/Exit Procedures (UK AIP AD 2.EGFF-4-1)

A4 Statement on St Athan ILS from [redacted]

From: [redacted]
Sent: 08 July 2019 10:53
To: [redacted] (ESNR - Economic Infrastructure - Aviation)
[redacted]
Cc: [redacted]
[redacted] >>
Subject: ILS

[redacted]

This is an extraordinary situation that is genuinely impacting our business, both in terms of the practicalities of airfield operation, and the credibility of EGDX/EGSY as an airfield - the repeated activation and de-activation of this ILS is impossible to explain to our customers and does not create a professional image of this location. Furthermore, many of our larger 'national carrier' customers are very reluctant to operate to a VFR location, since their crews have limited experience with these kind of operations (Qatar Airways recently refused to bring aircraft to our facility). Obviously the risk of diversion is increased with VFR approaches, and our customers are not only impacted with the direct costs of the ATC/Nav charges and fuel, but suffer significant effects of crew re-scheduling - which can be economically very substantial. The reputational damage to both [redacted] and St. Athan of VFR diversions is not possible to tangibly estimate, but is a genuine concern for us.

After 7 years of operation at St. Athan our business has matured to a point where the throughput is relatively stable. We received 46 aircraft arrivals in 2018 with three departures, and do not expect that will change - we are budgeting approximately 50 movements per year for the next couple of years.

Best Regards,

[redacted]

[redacted]

A5 Statement on St Athan ILS from [redacted]

From: [redacted]
Sent: 08 July 2019 16:02
To: [redacted])
[redacted]

[redacted]

[redacted] operation is dependent on a constant ILS availability.

We would lose substantial business worth millions of pounds, if we can't prove to our clients, that we have an ILS available. This would have a knock on effect, because our investors wouldn't continue to invest in our company, which would jeopardize our restructuring and growth plans.

At this stage, our main customers are reluctant to sign any GTA (General Terms Agreement) unless we can give green light on the ILS.

We really hope that a solution can be provided asap.

With kind regards,

[redacted]

[redacted]