



## CARDIFF INTERNATIONAL AIRPORT LTD RNAV IAP REPLICATIONS – POST IMPLEMENTATION REVIEW

### 1. Introduction

1.1 Approval was given, in December 2015, by the Safety & Airspace Regulation Group (SARG) for Cardiff International Airport Ltd (CIAL) to proceed with implementation of Area Navigation (RNAV) Approaches<sup>1</sup> (initial and straight-in) for Runway (RWY)12 and 30. Included in the approval was T-bar initial approach to RWY12 and 30; Track to a Fix (TF) path terminators for RWY 12 and 30; and straight-in approaches for RWY12 and 30. The airspace was introduced on 26 May 2016. The purpose of this document is to provide the outcome of a Post Implementation Review (PIR) in accordance with Stage 7 of the Airspace Change Process (ACP) as described in document Civil Aviation Publication (CAP) 725.

### 2. Background

2.1 Government policy<sup>2</sup> is to reduce reliance on ground based navigation aids. The introduction of RNAV Instrument Approach Procedures (IAP) aligns with this as it allows airlines to operate using greater capability of their respective Flight Management System (FMS). This provides more accurate navigation guidance that also results in minimizing the population numbers affected by direct over flight. This is achieved by the procedures leading to less lateral dispersion of flight paths, but, a greater concentration of traffic along the design track of each procedure.

2.2 The following groups were considered stakeholders for this proposal.

- a. Vale of Glamorgan Council.
- b. Bridgend Council.
- c. City of Bristol Council.
- d. Cardiff based airlines.
- e. Aviation community via NATMAC.

### 3. Key Objectives

3.1 The key objective was to introduce RNAV Approaches for RWY12 and 30. The aim was to achieve more accurate navigation, as opposed to the +5degrees on the ground based approach, which also results in fewer local residences affected by direct over flight. Additionally, it provided an opportunity to produce a T-bar initial approach, which provides a standardised join to an RNAV IAP, and straight-in approaches to both runways; alongside the IAPs, the T-bar and straight in approach comply with the ICAO PANS-OPS document stated at footnote 1.

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<sup>1</sup> Doc 8168 Vol II – PANS-OPS – Aircraft Operations Pt III Sec 1 (This document also contains information on T-Bar initial approaches and TF path terminators).

<sup>2</sup> Policy for the Application of Performance-based Navigation in UK/Irish Airspace – dated 13 October 2011

## 4. Air Traffic Management Requirements

4.1 **Safety.** It was highlighted that only suitably trained crews in appropriately equipped aircraft can fly the approaches. CIAL sighted the following mitigations:

4.1.1. ATC would not offer the approach; only available on crew request.

4.1.2. If the flight plan has been appropriately annotated (NAV (indicating the aircraft is appropriately equipped)) it is indicated to the controller on the Flight Progress Strip.

The introduction of the RNAV Approaches required CIAL to provide a safety case as part of their safety management system. When the approaches were implemented the indication of the capability (RNAV 1<sup>3</sup>) was not possible at CIAL. A CIAL engineering team resolved this and the indication now operates effectively.

4.2 **Delays.** No delays associated with the implemented approaches have been recorded. The approaches have potentially been a contributing factor in less overall delays/diversions as they provide an alternative approach should a ground based system fail in poor weather.

4.3 **Capacity.** No capacity issues have been attributable to the implemented approaches.

4.4 **Efficiencies.** Long-term, less maintenance will be requirement on ground based equipment. However, no immediate efficiencies have been observed.

## 5. Military Air Traffic Management Requirements

5.1 The Ministry of Defence has not been adversely affected by the introduction of the RNAV IAPs. Of note, RAF St Athan is inside Cardiff's CTR and has had no adverse effects.

## 6. Areas of Contention

6.1 **Environmental/Operational.** No areas of contention have been reported.

## 7. Environmental Conclusions

7.1 **Cardiff operator feedback.** FlyBe have reported that the approaches are assisting with Continuous Descent Operations (CDO)<sup>4</sup>; positive for both environmental considerations (reduced CO<sub>2</sub> emissions) and FlyBe's operations, which is ultimately positive for Cardiff Airport.

7.2 **Noise complaints.** There has been no discernible change in noise complaints. This was expected due to the RNAV approaches replicating existing tracks. However, a contributing factor could be the compatibility of CDO with RNAV approaches; the optimal trajectory giving minimum noise and minimum fuel burn is CDO.

## 8. Stakeholder Feedback

8.1 **Cardiff based airline.** FlyBe's feedback at 7.1 is the only Stakeholder feedback received.

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<sup>3</sup> ATC indications (RNAV 1) are different to flight plan annotations (NAV) but mean the same in this instance.

<sup>4</sup> CAP1165 – Managing Aviation Noise- Ch5 Pg36

## 9. Effectiveness of Change

- 9.1 **RNAV approaches (initial and straight-in) for RWY12 and 30.** Successfully implemented.
- 9.2 **Greater accuracy on the approach.** Greater accuracy has been evident on radar traces since the implementation of the approaches.
- 9.3 **Fewer local residences affected by direct over flight.** Residents living under the extended centreline, who were over flown previously, are *directly* over flown more regularly. Crucially however, there has been no discernible change in noise complaints.
- 9.4 **Implement T-bar initial approach and straight-in approaches for both RWYs.** T-bar approaches that comply with ICAO PANS-OPS have been implemented and used successfully.

## 10. Other Benefits

- 10.1 The implementation of the approaches satisfies the European mandate<sup>5</sup> and falls in line with government policy. It has also allowed redundancy of ground based equipment and assisted with CDO.

## 11. Operational Impact

- 11.1 Operational impact feedback was only received by FlyBe and is recorded at 7.1.

## 12. Airspace Change Process Issues & CAA Recommendations for Refinement

- 12.1 No issues or recommendations for refinement have been found.

## 13. Conclusion

- 13.1 The implementation of the RNAV approaches at Cardiff has been beneficial, both environmentally and operationally. Key objectives that align with government policy have been met and aims that comply with current regulation successfully achieved. Overall, the CAA is satisfied that the revised arrangements are working as anticipated and there are no safety related concerns with the implementation of the approaches.

Case Officer (for PIR only):



Airspace Regulator

Signed off by:



Manager Airspace Regulation

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<sup>5</sup> European Commission Performance Based Navigation Mandate – Dated 4 Feb 2011 (MOVE E2/EMM D(2011))