Safety & Airspace Regulation Group

12 March 2018

LIVERPOOL JOHN LENNON AIRPORT RNAV IAP REPLICATIONS – POST IMPLEMENTATION REVIEW

1. Introduction

1.1 Approval was given, in April 2016, by the Safety & Airspace Regulation Group (SARG) for Liverpool John Lennon Airport (LJLA) to proceed with implementation of Area Navigation (RNAV) Approaches[1] for Runway (RWY) 09 and 27. The airspace was introduced on 21 July 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[2] 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. Liverpool Airport Consultative Committee (LACC).
b. Noise Monitoring Sub-Committee (NMSC).
c. Local Authorities[3].
d. Airlines.
e. GA Community.
f. Other ANSP (Manchester).

3. Key Objectives

3.1 The key objective was to introduce RNAV Approaches for RWY 09 and 27. The aim was to achieve more accurate navigation, as opposed to the plus/minus 5 degrees on the ground based approach, which also results in fewer local residences affected by direct over flight.

4. Air Traffic Management Requirements

4.1 **Safety.** As the approaches replicate, as closely as possible, current ground based approaches there has been and remains no safety concerns. There has been 10 920 H24 hours (455 days[4]) of operations since the implementation of the approaches.

[1] Doc 8168 Vol II – PANS-OPS – Aircraft Operations Pt III Sec 1.
[2] Policy for the Application of Performance-based Navigation in UK/Irish Airspace – dated 13 October 2011
[3] Cheshire West & Chester, Flintshire, Halton, Liverpool, Warrington and Wirral.
[4] The data for this PIR is taken from the 10920 hrs (455 days).

4.1.1. Based on having an option of an alternative IAP in the event of an ILS failure, 50% of 'airline users' believed the approaches had a positive impact on safety. The remaining 50% believed the high safety standards before the approaches, have been maintained.

4.1.2. The Airside Safety Committee report that no airside safety incidents were identified that are attributable to the new procedures.

4.1.3. The Flight Safety Committee (inc ATC) reported that although the procedures are not the primary approach, they have proved most useful during ILS maintenance and outage periods[5].

4.1.4. During the original design of the procedures, a concern was potential infringement of Manchester airspace. Both LJLA and Manchester Airport have confirmed that there has been no reported airspace infringements of the Manchester CTR from aircraft flying the new procedures.

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.

6. Areas of Contention

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

6.2 **Operational.** No areas of contention have been reported.

7. Environmental Conclusions

7.1 **Noise complaints.** There have been no complaints or correspondence in relation to the new procedures[6]. This was expected due to the RNAV approaches replicating existing tracks. However, a contributing factor could be the compatibility of Continuous Descent Operations (CDO)[7] with RNAV approaches; the optimal trajectory giving minimum noise (and minimum fuel burn) is CDO.

7.2 **Noise levels/monitoring**. Recorded noise measurements from one week immediately prior to the introduction of the procedures were reviewed against one week a year later. The results do not indicate any significant change. The noise monitoring sites can be seen at Fig 1.

[5] ILS RWY 09 availability for the period – 81.28%; ILS RWY 27 availability for the period – 100%
[6] There has been no discernible change to the overall number or nature of complaints.
[7] CAP1165 – Managing Aviation Noise- Ch5 Pg36

Fig. 1.

7.3 **Track monitoring.** The tracks pre and post implementation, from the Noise Monitoring and Track System, follow the expected patterns for arrivals.

8. Stakeholder Feedback

8.1 **Aviation users.** The general view of aviation user stakeholders was that the RNAV approaches give them the ability to better react to weather changes and mitigate ILS unavailability.

9. Effectiveness of Change

9.1 **RNAV approaches for RWY09 and 27.** Successfully implemented.

9.2 **Greater accuracy.** Greater accuracy on the approach (in azimuth) 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 straight-in approaches for both RWYs**. 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[8] 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 Three of four operators' view is at 8.1.

[8] European Commission Performance Based Navigation Mandate – Dated 4 Feb 2011 (MOVE E2/EMM D(2011)

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 LJLA 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 IAPs are working as anticipated and there are no safety related concerns with the implementation of the approaches.

Case Officer (for PIR only):

[redacted]

Airspace Regulator

Signed off by:

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Manager Airspace
SARG