LJLA Airspace Transition

Design Principles Questionnaire

This document shows only the introductory section, common in all questionnaires sent to stakeholders

The questions have been omitted, but are included in the Design Principles Report

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1 Introduction

1.1 Context

The majority of UK airports, including Liverpool John Lennon Airport (LJLA), are seeking to modernise their Instrument Flight Procedures (IFPs) and, where necessary, the airspace design containing these procedures. IFPs is a term used to describe the published profiles aircraft fly over the ground, both in plan and elevation view. Modernisation is required to allow aircraft to make the best use of GPS technology to enhance levels of safety, define more accurate routing and allow the airport to explore different options for the way aircraft approach and depart LJLA. Airspace change on this scale happens once in a generation, and LJLA wishes to offer its local communities an opportunity to influence the criteria and principles that define a framework against which different design options will be evaluated.

1.2 Background

LJLA wishes to comply with Resolution 36/23 ratified by the 36th International Civil Aviation Organisation (ICAO) General Assembly, as well as with the UK Future Airspace Strategy (FAS) published by the Civil Aviation Authority (CAA)[1]. To comply with these directives, and alongside other UK airports, LJLA is required to explore options for alternative Standard Instrument Departures (SIDs) and Standard Arrival Routes (STARs) that are compliant with Performance Based Navigation (PBN) criteria. Essentially, this means introducing procedures to arrive and depart from the airport that are designed and flown with reference to Global Positioning Systems (GPS) rather than the traditional ground-based navigation aids.

The UK is currently undertaking a programme (known as the DVOR[2] Rationalisation and NDB[3] Withdrawal Programme), which over the next few years will phase out ground-based navigation aids. Many of these ground-based systems were initially introduced in the early 20th Century and are now reaching the end of their productive life. These ground-based aids have for many years defined the tracks and turning points of what are now known as "conventional procedures". The removal of these ground-based navigation aids therefore necessitates the introduction of GPS technology to define future GPS routes that will also be more accurate and reliable. These routes will be used by the increasing numbers of aircraft, suitably equipped and capable of using GPS technology.

The UK current airspace system was designed many years ago; since then the increasing volume of air traffic has increased congestion in the airspace system and reduced airspace efficiency. Improvements in aircraft technology and performance now presents an opportunity to modernise UK airspace and flight procedures. Modernisation also allows the UK aviation community to exploit opportunities to enhance the overall environmental performance of the airspace system, where these exist. Modernisation will also ensure operations at UK airports can be conducted more efficiently for the benefit of both operators, fare-paying passengers and local communities.

The efficiency and safety of LJLA runway departure and arrival routes that guide aircraft to and from the airport are at the heart of a questionnaire contained within this document.

[1] The CAA is the UK's independent airspace regulator
[2] Doppler VHF (Very-High-Frequency) Omnidirectional Range.
[3] Non-Directional [*radio]* Beacon.

This airspace change is not about LJLA seeking to improve existing planned capacity to handle additional volumes of air traffic. It is only concerned with utilising new satellite-based technologies, increasingly available in aircraft and on the ground, to protect existing capacity. However, this change does offer opportunities to identify and minimise the environmental impacts of aircraft operations, wherever possible.

LJLA fully appreciates that some people may have concerns about airspace change. LJLA will therefore need to ensure that this change favourably balances the requirement to deliver safe, effective and sustainable arrival and departure procedures against the requirements of local communities who would wish to minimise any environmental impact, particularly noise.

1.3 Governmental Guidance and Process

Under section 66 of the Transport Act 2000, the Secretary of State gave the CAA (the UK aviation independent regulator) a number of airspace-related functions, including: the duty to develop policy and strategy on the classification and use of airspace; to publish the UK airspace design; and to approve changes to it. Under section 70 of the Transport Act 2000, the CAA has a duty to take several factors into account when considering whether to agree to an airspace change proposal; this includes taking account of specific guidance on the environmental objectives contained within the current Air Navigation Guidance.

At the beginning of 2018 the CAA introduced a new process that the regulator and sponsors of airspace change proposals should follow when proposing any airspace change. This new process was developed to ensure a greater level of transparency and two-way engagement with local communities. The new process is described in the CAA publication (CAP) 1616, at the link below:

http://publicapps.caa.co.uk/docs/33/CAP1616%20Airspace%20Design%20non-interactive.pdf

The CAP 1616 Airspace Design process sets out the CAA's role to approve changes to airspace design[4], and to the law and policy which govern the CAA role. The guidance in CAP 1616 sets out the framework for the stages of the process and the activities that must be undertaken from the conception of the need for a change. It details what must be undertaken during the airspace re-design; the consulting and engagement requirements with those potentially impacted; how to assess the impacts of different design options from a safety, operational and environmental perspective; and ultimately how the regulatory decision will be made. If an airspace design change is approved by the CAA, the guidance also covers implementation and the subsequent Post-implementation Review[5] that assesses how the airspace change has performed since introduction and whether the anticipated impacts and benefits defined in the original proposal and decision have been delivered.

1.4 LJLA Current Operations

To provide some insight into the distribution of aircraft tracks currently arriving and departing from LJLA, Figure 1 and Figure 2 below show LJLA arrivals in red and departures in blue. The tracks shown are those where aircraft arrive and depart along the LJLA published IFPs. It should be understood, that other General Aviation (GA) aircraft, not shown in these Figures, may arrive and depart from the aerodrome along other published

[4] Defined by CAP 1616 as: "Together, the airspace structure and flight procedures."
[5] Post Implementation Review (PIR), ideally conducted one year after implementation of the changes.

VFR[6] routes, or routes agreed by an aircraft Captain and LJLA Air Traffic Control (ATC). These VFR routes are not the subject of this airspace change project.

Figure 1 depicts operations from Runway 27; this is normally the preferred runway because aircraft normally take-off and land into the prevailing westerly wind. Figure 2 depicts operations from Runway 09, associated with easterly winds. The aircraft tracks shown in each Figure were generated during one week of Summer of 2018.

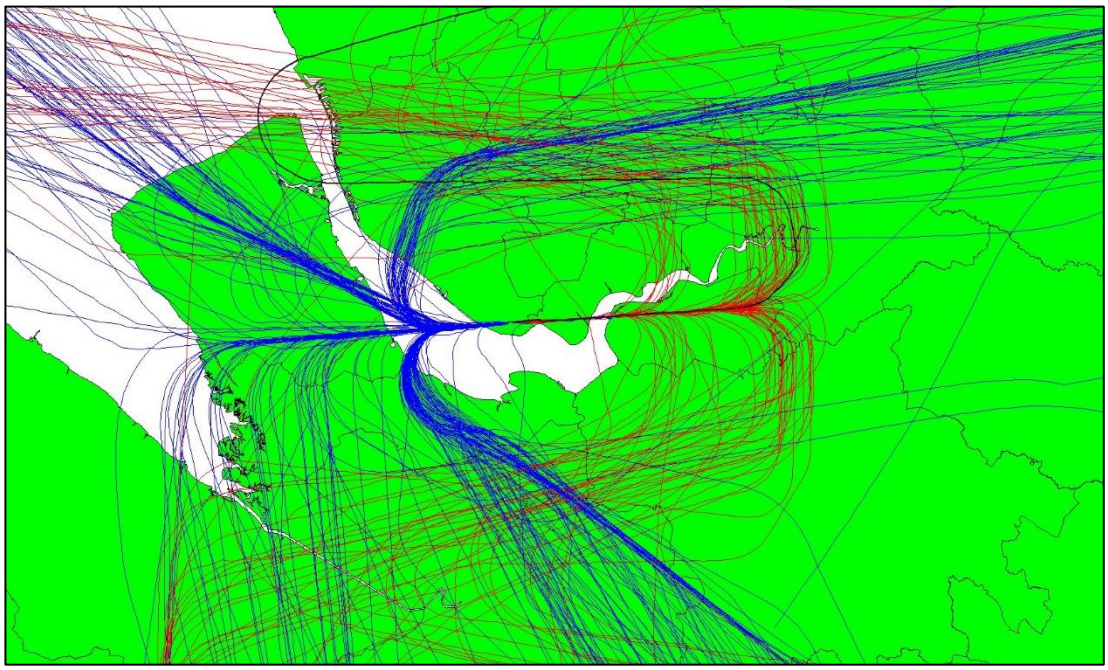

Figure 1 - Runway 27 Arrivals (red) and Departures (blue) (First Week of August 2018)

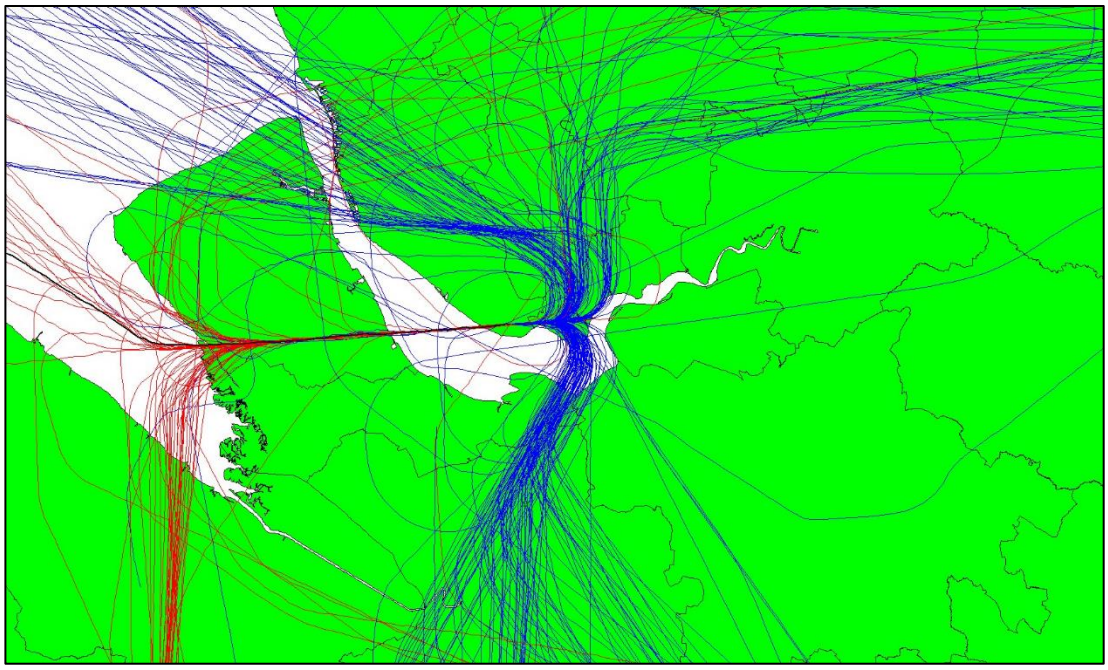

Figure 2 - Runway 09 Arrivals (red) and Departures (blue) (First Week of July 2018)

[6] VFR – Visual Flight Rules (a set of regulations under which a pilot operates an aircraft in weather conditions generally clear enough to allow the pilot to see where the aircraft is going).

Aircraft flying along the procedures above in Figure 1 and Figure 2 generate a level of noise on the ground that may have an impact on local communities. Figure 3 below shows the calculated noise contour that represents the area around the airport within which noise levels can be expected to exceed 51dBA $L_{Aeq\ 16hr}$. The Department for Transport (DfT) directs that the CAA must consider this noise contour alongside many other environmental factors when reaching its decisions. This contour represents the average noise levels for the 16-hour period between 0700 and 2300 hrs during the summer season. DfT policy also regards this level as the point at which adverse effects begin to be seen on a community basis. However, LJLA recognises that people are likely to be concerned about noise beyond this contour.

As can be seen from the contour shown below, the majority of the noise associated with the airport is predominantly distributed to the south and west, the airport itself, or over sparsely-populated areas. We would not expect this noise contour to change, given the fact that the intial take-off and final approach tracks will remain the same with any new designs.

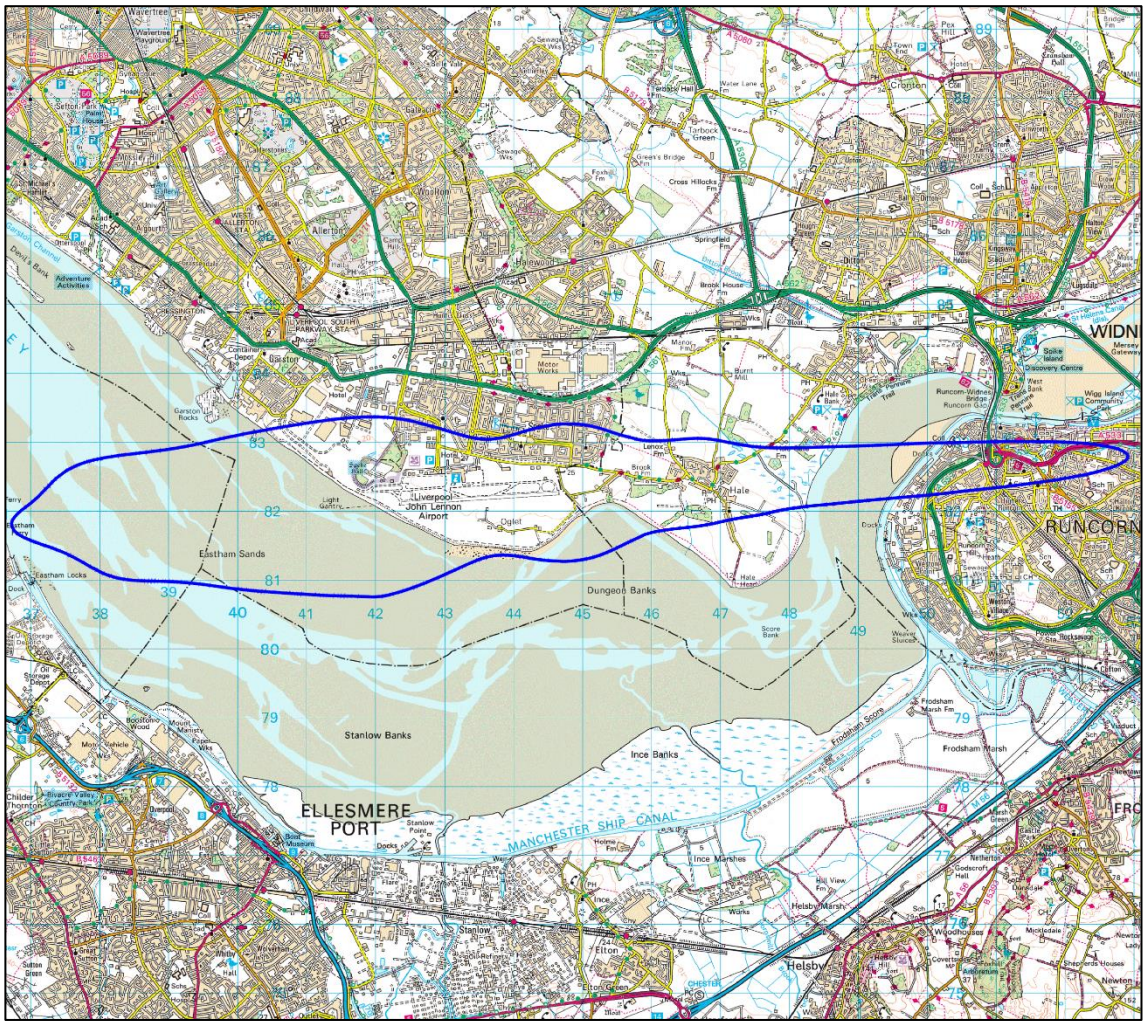

Figure 3 - Noise Contour 51dBA $L_{Aeq\ 16hr}$

1.5 Further Points for Your Consideration

This section provides some further explanation that may help you when considering your responses to the questions at Section 0.

1.5.1 PBN Procedures

As described in paragraph 1.2, the new PBN procedures make use of GPS technology to better guide aircraft over the intended track across the ground. When using routes defined by accurate GPS waypoints, it is important to understand that aircraft will follow the new published routes more accurately and consistently than they currently follow conventional routes. This improved track-keeping accuracy means aircraft will be less dispersed either side of each route. Therefore, fewer locations will be directly overflown, but there will be an increase in the concentration of over-flights in those areas directly beneath the new published routes. It may therefore be possible to formulate designs that minimise the numbers of new people overflown by designing procedures over less populated areas, or by designing procedures that distribute noise over different areas, i.e. over more people, but at less frequent intervals.

1.5.2 Urban and Rural Areas

You may wish to consider the advantages and disadvantages of designing routes that are planned to overfly either urban or rural areas. Flights over more sparsely populated areas may seem to be the best alternative. However, you may also wish to consider the levels of background noise when balancing the urban and rural alternatives. Aircraft flying over urban areas will pass over a larger number of people and residences. However, in urban areas the levels of background noise are likely to be much higher than in rural areas. Consequently, aircraft noise may be masked because of higher noise levels associated with traffic and many other background activities common in urban locations.

1.5.3 Open Areas

In many urban locations you may feel it is important to protect quiet or open areas (eg parks) by designing flight procedures that avoid these areas. However, in large urban areas it may not be possible to avoid overflight of quiet areas and, at the same time, also avoid overflight of more densely populated areas. This may be because of the proximity of runways to urban areas or to the orientation of the runway itself.

1.5.4 Noise and Emissions

An aircraft flying a straight line directly from one location to another is the most efficient routing option because it represents the shortest distance and time between locations. When flying a longer route between the same locations (perhaps to minimise noise impacts in a sensitive area) the distance and time of the flight will increase, as will the fuel burn and associated emissions into the atmosphere. When answering the questions, please consider this balance between noise and emissions in general terms.

1.5.5 Time of Day or Different Operations on Different Days.

When responding to the questions, you may also wish to consider whether your comments are applicable by day or by night, or whether you feel that priorities should change over the 24-hr period, or day to day.

1.6 Action Required

LJLA has a relationship with its local communities and remains committed to involving local stakeholders who may wish to offer their views on any operational changes. It is important

to LJLA to conduct effective engagement in a transparent way, and in accordance with the guidance contained within Stage 1 (Define) of the new CAA process. We recognise the importance of capturing the views of both local aviation and non-aviation stakeholders who may wish to express their thoughts concerning any future changes.

It is important to understand that, at this stage of the process, our initial engagement is limited to a selection of representative bodies and individuals who can offer views on behalf of their local communities. These views will help us to formulate some Design Principles, which you will have an opportunity to review. The Design Principles will themselves provide the framework against which Design Options can be evaluated. After the Design Options are drawn up, LJLA will share these with the same representative bodies involved in developing the Design Principles. The more detailed Design Options will then be the subject of a later, full public consultation exercise.

This document has therefore been produced to help us ascertain the views of our local non-aviation and aviation stakeholders. We have developed the questions below in Section 0 and would encourage you to insert your responses in the enclosed table and return this to us as described in paragraph 1.7 below.

Please do not feel constrained in your response to any question. If you wish to highlight any other relevant local constraints or issues, then LJLA would welcome any feedback you choose to contribute that will support the development of our Design Principles. Your responses may be operational or environmental in nature but are those you feel are most important to you, or to your represented community.

1.7 How to Respond

Please save the file that includes your responses and attach to an email to the following address:

airspacechange@liverpoolairport.com

In addition to the word file, we will accept scanned, hand-written responses or email responses as long as they are legible and clearly identify the question to which your response relates.

We will also accept legible postal responses to the following address within the timescales specified above:

Airspace Change
Liverpool John Lennon Airport
Admin Office
Liverpool
L24 1YD

It is important that individual email responses clearly show your name and contact details; this will allow us to cross refer to the emails we send out.

1.8 Focus Groups

During September and early October LJLA intends to organise some Focus Groups with its key stakeholders. It would be useful if you could complete the attached questionnaire and return this ahead of these events by the date shown in para 1.9 below.

During the Focus Group discussions additional view will be recorded and collated. Following analysis of all the views articulated by the groups and in the individual

responses, LJLA will draft the Design Principles document, for review and subsequent submission to the CAA.

1.9 Timescale for responses

As briefly mentioned in paragraph 1.5.5, it is anticipated that the full public consultation will be conducted in early 2019. LJLA will ensure any views expressed at this stage will also be recorded to further inform the full consultation report.

For your questionnaire to be used to help the Focus Group discussions, it would be useful to have your completed **response by Monday 10th September, or no later than Monday 17th September 2018.**