

Carlisle Airport 54dB LAeq Noise Contour and Population Analysis

Background

Carlisle Airport is currently undertaking an application through an Airspace Change Proposal (ACP) that aims to deliver new Instrument Flight Procedures (IFPs) using Area Navigation (RNAV) satellite-based technology. If approved, the new procedures will add to the existing IFPs that utilise conventional ground based navigational aids. The project commenced in 2016, and the designs were the subject of a Public Consultation that ran from 4th January 2018 until 29th March 2018 in accordance with the process set out in Civil Aviation Authority (CAA) Civil Aviation Publication (CAP) 725 *"Airspace Change Guidance Document"*¹.

The CAA has recently changed the process by which sponsors of an airspace change should manage their projects. The new process is described in CAP 1616 *"Airspace Design: Guidance on the regulatory process for changing airspace design including community engagement requirements"*.² Carlisle Airport is following the previous process which was published within CAP 725. The CAA published transition arrangements which meant that projects that had reached Stage 4 of CAP 725 ACP process could remain on that process; those that had not reached Stage 4 (Formal Consultation) were required to transition to the new process described in CAP 1616.

Originally, Carlisle Airport was not required to produce noise or environmental analysis within the ACP as the proposed change was deemed to have little significant change to flight profiles. However, transition arrangements between the two processes have been questioned and as a result, the Department for Transport (DfT) requires the CAA to be content that in order to remain on the CAP 725 process, the Airport must demonstrate that it meets Air Navigation Guidance (ANG) 2014 provided by the DfT in that the airport currently exposes less than 10,000 people to a noise contour of 54 dB LAeq.

Methodology

Osprey has calculated noise contours utilising the Federal Aviation Authority (FAA) Aviation Environment Design Tool (AEDT) (version 2d) in order to meet the requirements of the DfT and the CAA:

- 54 dB LAeq 16-hour contour for historical aircraft movements in 2017.

Osprey has modelled the noise contour and utilised CACI UK Population Data for 2017 to ascertain the numbers of people likely to be exposed to the 54dB LAeq noise contour.

¹ <https://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=395>

² <https://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=8127>

Leq Contours

The 54 dB LAeq contour was based upon Carlisle Airport traffic data for the 92-day summer period (16th June – 15th September 2017, 0700-2300 local time) for aircraft utilising runway 25/07. Aircraft details, including available aircraft types provided in the AEDT database, were input to AEDT, and differentiation was made between arrival and departure profiles. For specific aircraft models not contained in the AEDT database, a comparative aircraft model was used. Since a simplistic noise contour was required and for the purposes of the modelling, it was assumed that all aircraft made a straight-in arrival and a straight departure.

The modelling utilised real traffic data experienced at the Airport over two whole months (July and August 2017) which allowed us to determine a 100% westerly and easterly average summer day to be input into AEDT using a modal percentage split of 80:20 to reflect which runway was used more frequently over the period analysed. This produced average mode contours for an average summer day.

Results

The modelling showed that with the existing flight profiles, less than 50 households and less than 50 members of the population are exposed to the 54dB LAeq noise contour. Although the modelling was only required for 54dB LAeq noise contours, we also modelled the 51dB LAeq noise contours which showed the same results. This is well below the figure of 10,000. The analysis is included within the images below:

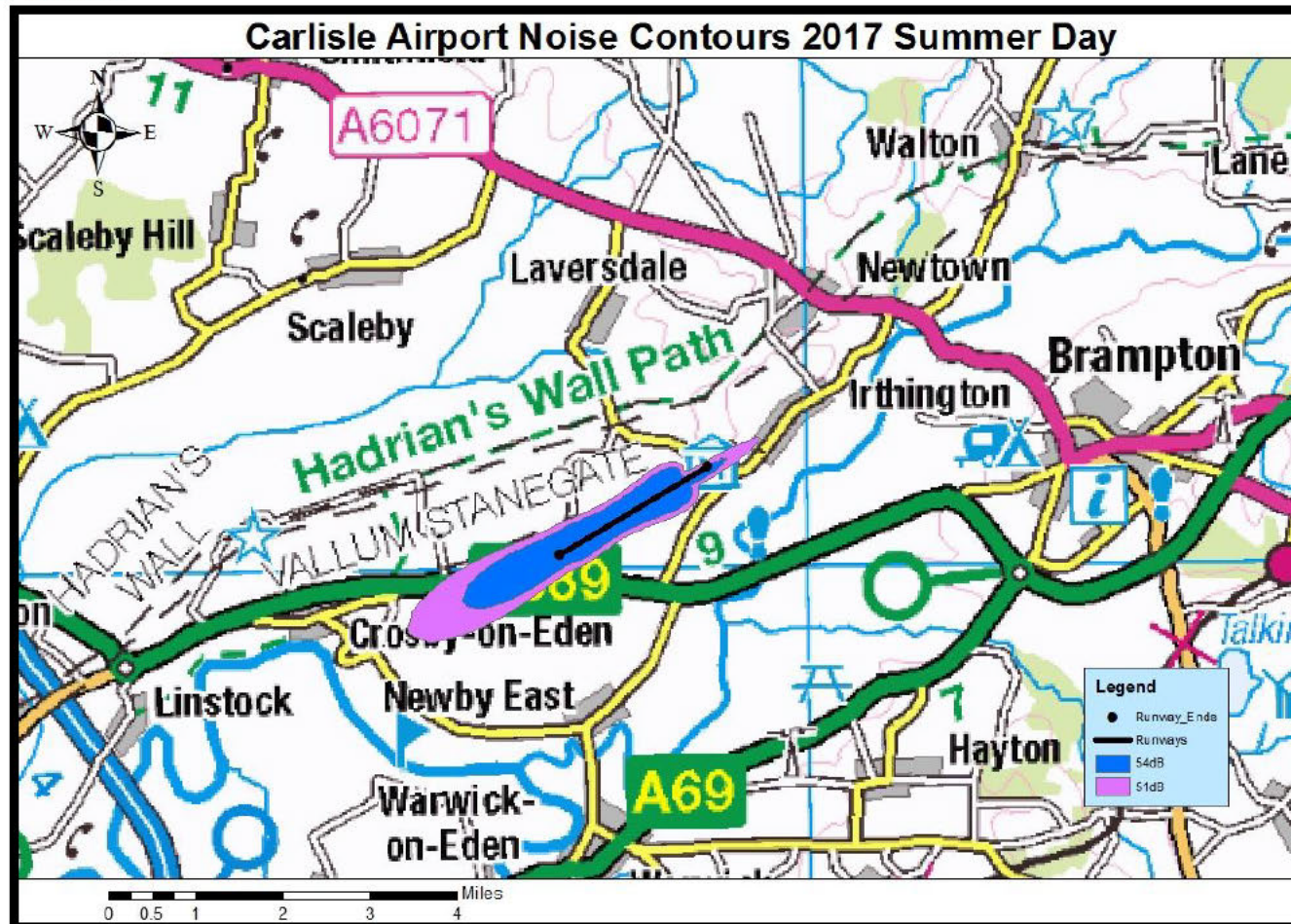


Figure 1 Carlisle Airport Summer 2017 51dB and 54dB LAeq 16-hr Noise Contour

Contour (dB)	Population	Households
>51	<50	<50
>54	<50	<50
>57	<50	<50
>60	<50	<50
>63	<50	<50
>66	<50	<50
>69	<50	<50
>72	<50	<50

Table 1 Total Population and Households Exposed to 16 Hour LAeq Noise Contours.

These results demonstrate that Carlisle Airport meets the requirements within ANG 2014 and can continue to be assessed against the CAP 725 process.

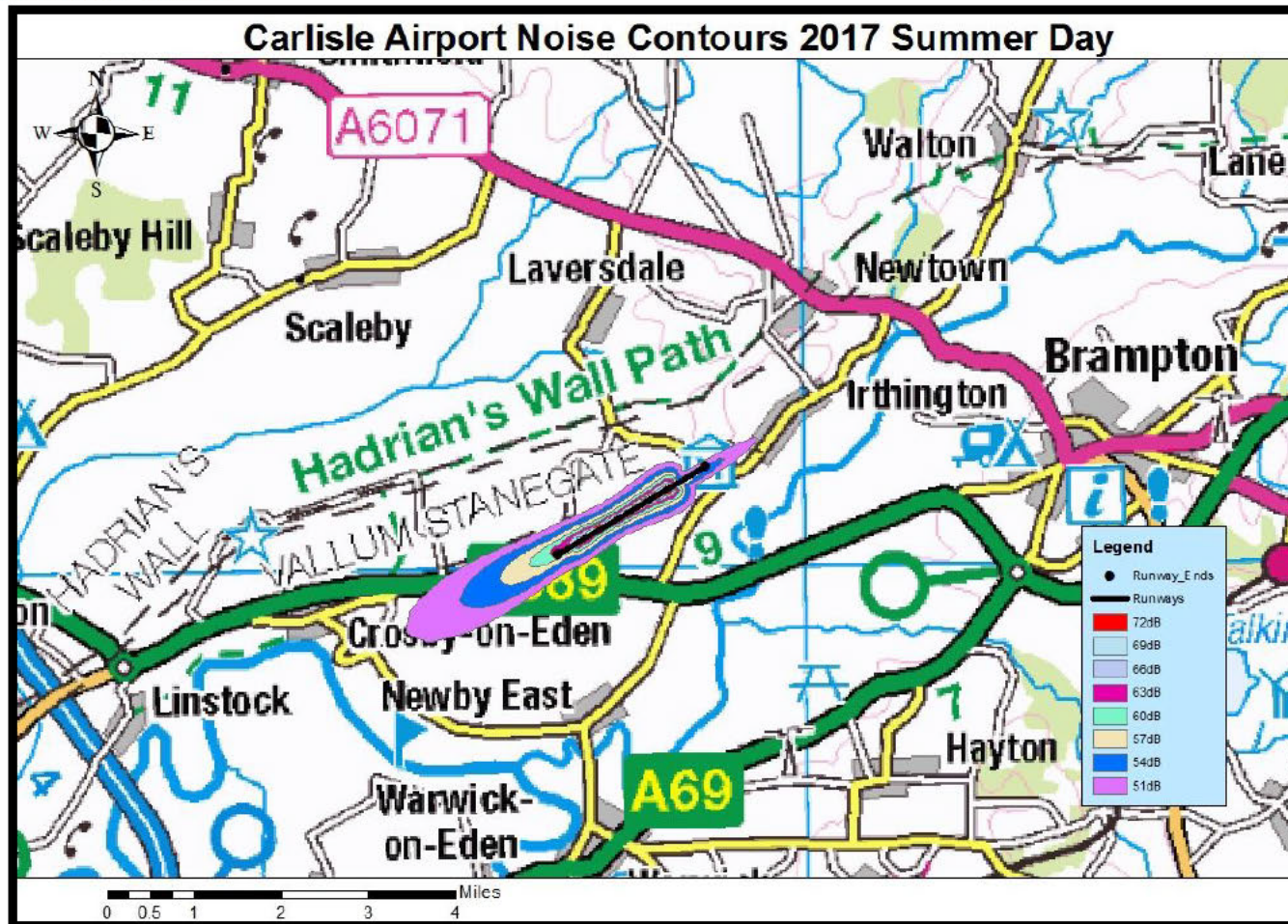


Figure 2 Carlisle Airport Summer Day Operations 16 hr L_{Aeq} Noise Contours