

# Measuring, Managing and Mitigating Aircraft Related Noise





Airport noise is, understandably, a significant issue for some of our neighbouring communities. Achieving the most appropriate balance between the needs of a growing airport that serves as a major transport hub for millions of business and leisure travellers, and the requirements of our nearest residential neighbours provides an ongoing challenge for Dublin Airport as it does for all airports of its size.

## Assessing and Measuring Noise

Noise is subjective and personal to each individual. Aircraft generate noise both on the ground and in the air. The amount of noise generated depends on the type of aircraft and how it is operated. Aircraft noise is measured in decibels or dB for short. Aircraft entering the market today are 20 decibels (dB) quieter than aircraft 40 years ago.

Noise around airports is measured by calculating long-term average noise levels and modelling them in sound contours. These contours show a set of closed curves on a map and are analogous to the contours on an ordinary map showing places at the same height. Each contour shows places where people are exposed to the same amounts of noise from aircraft, so they allow mitigation measures to be tailored to very specific areas. The contour closest to the noise source will have the highest number and those furthest away, the lowest number.

The following factors are assessed in determining noise contours: runway location(s); arrival and departure routes; aircraft movements (number by aircraft type); the split of the movement amongst the runway(s) and routes; and airport procedures such as intersection take-offs. daa typically uses average contours (LAeq contours) for assessing new infrastructure such as runways. This approach is in line with international best practice and is used at a number of airports worldwide.

# A Balanced Approach

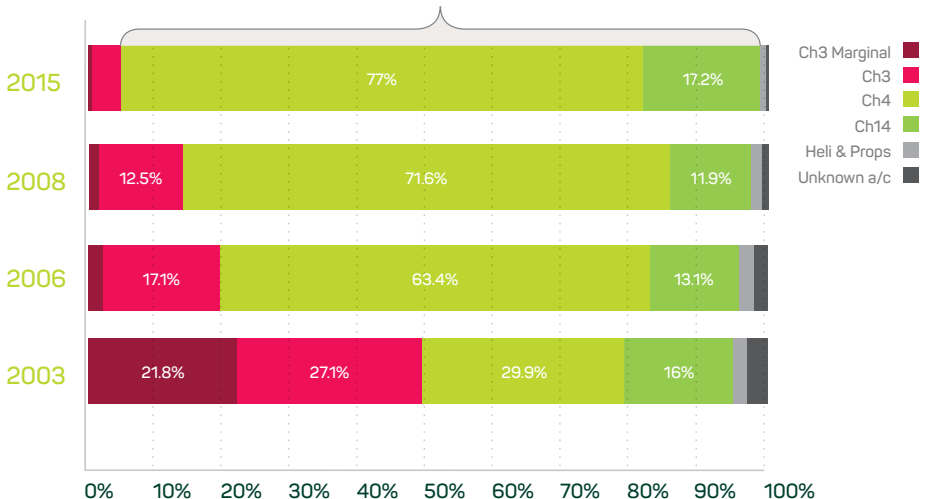
The International Civil Aviation Organization (ICAO) framework relating to aircraft noise is the Balanced Approach, which aims to strike a balance between the needs of the aviation industry to develop and grow and the need to minimise and reduce noise in communities surrounding airports. We already undertake a wide range of measures to avoid and mitigate noise impacts at Dublin Airport in line with the Balanced Approach.

## Reduction of noise at source

Over the past 20 years the models and types of aircraft using Dublin Airport have evolved with changing profiles in passengers and business models and the introduction of more stringent noise standards for aircraft. These standards are developed by the ICAO and enforced throughout the EU. The ICAO Noise 'Chapter' defines specific noise performance criteria to which aircraft must be certified.

Since 2002, Chapter 2 aircraft are banned from use in Europe. In 2015, almost 95% of aircraft using Dublin Airport were Chapter 4 or Chapter 14 compliant - the quietest types.

2015 Chapter 4 + Chapter 14 = 94.2%





## Land-use Planning

Dublin Airport has benefitted from a far-sighted planning process that has kept the approaches to the runways largely clear of development and limited noise exposure. This is achieved by reference to the established airport noise and public safety zones during the statutory planning process. Fingal County Council's County Development Plan 2011-2017 defines 'inner' and 'outer' noise zones; the inner zone to limit new residential development and other noise-sensitive uses, and the outer zone to control inappropriate development and require noise insulation where appropriate.

## Operational Procedures

Along with our airport stakeholders, we have implemented a wide range of operational procedures to minimise noise at Dublin Airport. These include:

- Noise Preferential Runway usage: Aircraft must use the preferred runway under specific conditions and time of day/night. These are selected for noise abatement purposes, the intent being to utilise whenever possible the runways which enable aircraft to avoid noise-sensitive areas during the initial departure and final approach phases of flight.
- Reverse thrust is not permitted at night, unless required for safety reasons.
- Continuous Descent Approach: This reduces the noise experienced on the ground by reducing the overall thrust required during the initial descent and keeping aircraft at higher altitudes for longer.
- Environmental Noise Corridors which aircraft must adhere to on arrival and departure to minimise noise impact.
- Engine test runs are only permitted at certain times to minimise ground noise.
- Noise Abatement Procedures: Specific rules on how aircraft should perform take-off climbs to ensure that noise is minimised.
- Limitations on the use of the cross-wind runway.

North Runway will be operated according to mode of operation Option 7b, which extends the concept of a noise preferred runway usage to the North Runway to lessen the impact of aircraft noise on local communities. In addition, prior to the commencement of construction, the aircraft engine test site at the northern end of the airfield will be relocated to the centre of the airfield, away from populated neighbouring areas.

The Balanced Approach is very clear that each airport should assess the noise situation specific to its operations and develop appropriate measures to manage noise in line with the Balanced Approach. It also specifies that noise related operating restrictions should be introduced only as the last resort.

The National Aviation Policy (NAP) for Ireland, published in 2015, states that Ireland will implement a "Balanced Approach" to noise management at Irish airports.

## Community Engagement

All aircraft arriving and departing Dublin Airport come under the direction of the Irish Aviation Authority (IAA), which provides air traffic control services in Ireland and is responsible for the controlling and routing of aircraft. The reduction of aircraft noise on neighbouring communities is the joint responsibility of the airport authority, the IAA and the airlines that operate at Dublin Airport.

daa has regular meetings with the IAA to continuously review the track-keeping of aircraft in the vicinity of Dublin Airport. If a complaint is made to Dublin Airport the flight track is reviewed to assess whether the aircraft was off-track. 99% of aircraft using Dublin Airport adhere to the established routings.

daa shares data from our Flight Tracking Monitoring System with local stakeholders through the Dublin Airport Environmental Working Group (DAEWG). This group brings together local communities and representatives from daa and the IAA under the guidance of an independent chair to discuss environmental topics relevant to the airport and its community. This forum has been in place (in various formats) for almost 10 years and continues to provide valuable engagement for all parties.

# North Runway Planning Requirements

The 2007 grant of planning permission for North Runway defined certain eligibility criteria (based on noise levels) at which sound mitigation measures such as voluntary home buyout and/or home/school insulation schemes would be required.

## Voluntary Buyout Scheme

At Dublin Airport, 69 dB is the point at which the planning permission stipulates daa will offer to buy homes. Prior to commencement of development, a scheme for the voluntary purchase of dwellings will be submitted to and agreed in writing by the planning authority. Prior to the commencement of operation of the runway, an offer of purchase in accordance with the agreed scheme will have been made to all dwellings coming within the scope of the scheme and the offer will remain open for a period of 12 months from the commencement of use of the runway.

## Insulation of Homes and Schools

A number of properties were insulated when the southern runway was developed and daa will be complying in full with the conditions attached to the permission for North Runway which will require the insulation of further households.

63 dB is internationally recognised as a threshold for noise mitigation to dwellings while 60dB is applied to schools. These thresholds are reflected in the planning conditions attached to the permitted runway. Prior to commencement of the development of North Runway, a scheme for the voluntary sound insulation of existing dwellings and schools will be submitted to and agreed by the planning authority (in consultation with the Department of Education and Science in regard to schools).



63dB LAeq, 16hr Noise Contour (Current forecast data) — blue  
63dB LAeq, 16hr Noise Contour (An Bord Pleanála - 2007) — pink

## Applicable Contours for the Insulation Scheme

The amount of noise projected from aircraft movements at Dublin Airport has decreased significantly since the original planning process. This is due to a number of factors, including the introduction of quieter aircraft. As a consequence, based on objective and verifiable modelling, the scope of the 63dB LAeq 16h contour has reduced.

However, in consideration of its most immediate neighbours, daa will instead have regard to the noise contours submitted to An Bord Pleanála in 2007. The 2007 contour encompasses a larger area that extends the insulation scheme to more homes. As a result, c. 40% more houses will be eligible to benefit from the insulation scheme.

daa will further update the noise contours to factor in the application to maintain operational flexibility at Dublin Airport. Following this assessment, the number of homes eligible for insulation may increase further. We will continue to keep residents informed.

**For more information please contact the community liaison team**

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