

Noise MONITORING BROCHURE 2024

INFORMING OUR
COMMUNITY



Under the Christchurch District Plan, Christchurch International Airport Ltd (CIAL) is required to assess noise from aircraft using Christchurch Airport.

This assessment generates an Annual Aircraft Noise Contour (AANC) based on recent aircraft movement data.

Noise generated from aircraft using the Airport must not exceed the 65 decibel (dB) Level Day Night (Ldn) contour (called the Operative Air Noise Contour) in the District Plan.

In addition, Christchurch Airport must comply with certain district planning regulations relating to:

Noise level restrictions associated with noise generated by on-aircraft engine tests.

Ensuring properties where noise generated by aircraft and on-aircraft engine testing reaches a certain threshold are provided acoustic treatment.

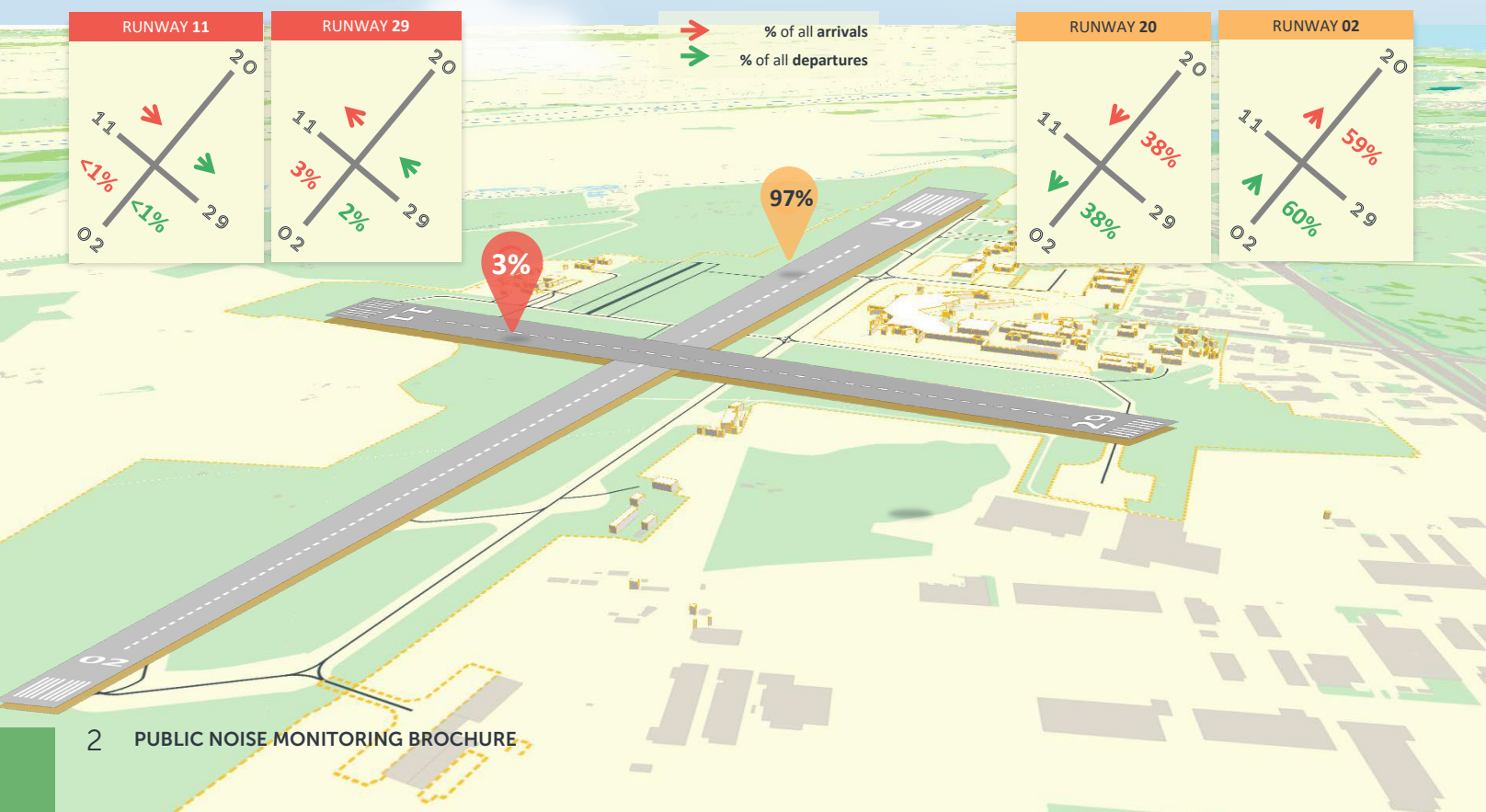
The purpose of this brochure is to present the outcomes of the 2024 noise monitoring assessment, where Christchurch Airport was found to be compliant with District Plan requirements.

DID YOU Know?

Runway **02/20** is the main runway, used for about 97% of flights in 2024. Because it is longer, it can handle most large aircraft, including the A380.

Runway **11/29** is shorter and was used for about 3% of flights in 2024. It is mainly for smaller aircraft like regional turboprops (Q300) and narrowbody jets (A320), though smaller widebodies may use it at times. This runway is used when strong north-west winds make the main runway difficult for smaller planes to operate. While larger planes are designed to handle stronger crosswinds, smaller aircraft are more sensitive to them. In these conditions, using a runway that allows planes to take off and land into the wind (a headwind) is the safest option.

When maintenance is carried out on the main runway, sections are closed for work. During these periods the main runway may still operate on a reduced length. If it is unavailable, the cross-wind runway is utilised more often to enable flights to keep operating on schedule.



WHAT IS operational noise?

As defined in the Christchurch District Plan, aircraft operational noise includes:

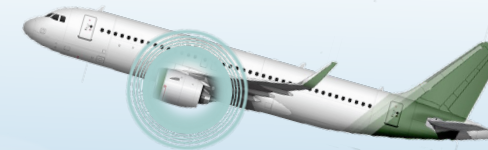
The landing and take-off of aircraft and aircraft flying along any flight path associated with a landing or take-off. Operational noise excludes aircraft operating in an emergency for medical or national/civil defence reasons, air shows, military operations, Antarctic operations, helicopter operations, aircraft using the Airport as an alternative to a scheduled airport elsewhere and aircraft taxiing.

The **three** main components of aircraft noise are:

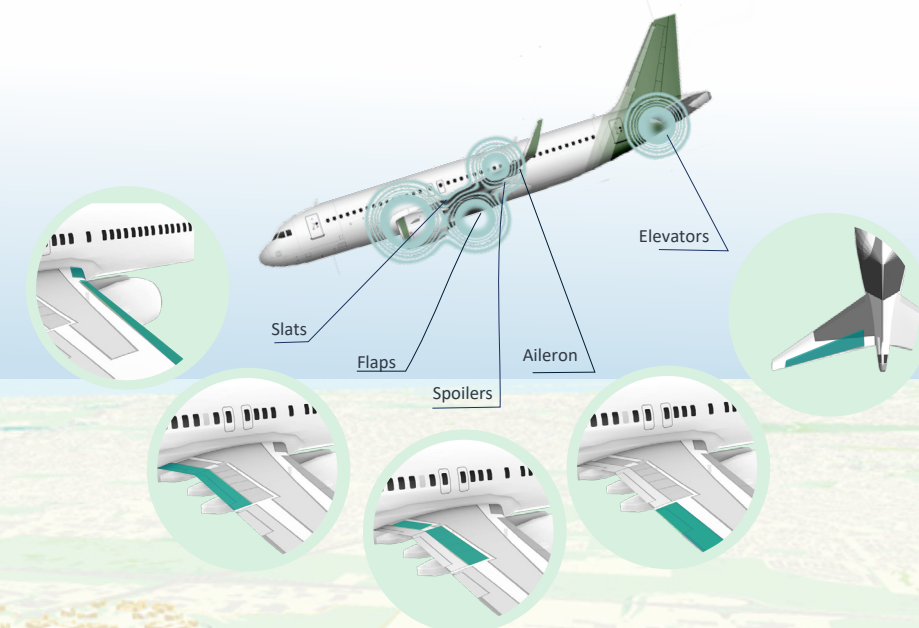
1. The engine components.
2. The aerodynamic drag or resistance of airflow around the aircraft's fuselage or wings.
3. The deployment of nose and main wheel landing gear from the undercarriage and aircraft control surfaces (i.e., flaps, slats, ailerons and elevators).

Meteorological conditions can change the way that noise is experienced.

ENGINE NOISE (Departure & Climb-Out)



AIRCRAFT CONTROL SURFACE NOISE (Arrivals & Final Approach)



WHAT is....

THE OPERATIVE AIR NOISE CONTOUR?

Like many other countries, New Zealand uses noise contour maps produced through noise modelling as a basis for town planning to manage aircraft noise exposure.

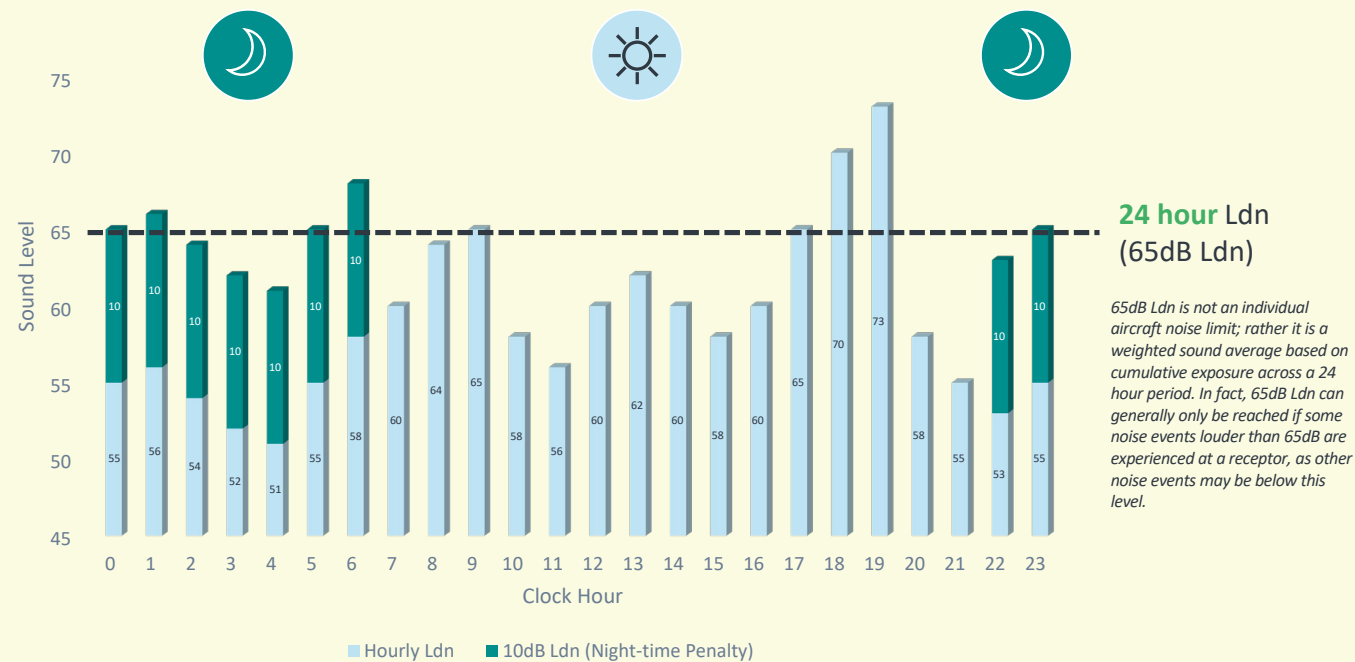
Noise contours show the extent of exposure to aircraft noise and the areas where higher levels of aircraft noise occurs. New Zealand Standard NZS 6805: 1992 Airport Noise Management and Land Use Planning recommends using noise contours and guides this process.

The Christchurch District Plan depicts the 65dB Ldn Operative Air Noise Contour, around the Airport. This contour is based on the calculated ultimate capacity of the airport, at approximately 200,000 annual aircraft movements. Within this area, aircraft operations must be managed such that aircraft noise exposure does not exceed 65dB Ldn.

THE LDN METRIC?

The New Zealand Standard NZS 6805: 1992 Airport Noise Management and Land Use Planning uses the Ldn metric for airport noise contours. This is an equivalent sound level used to reflect a person's cumulative exposure to sound over a 24 hour period and includes an additional 10dB Ldn imposed during night-time hours, Night-time hours are 10pm to 7am. This night weighting accounts for people's increased sensitivity to noise at night.

The Ldn takes into account both the amount of noise from each aircraft operation as well as the total number of operations flown throughout the day. This means a small number of relatively loud operations can result in the same Ldn as a large number of relatively quiet operations. The graph below depicts a hypothetical example of the Ldn concept.

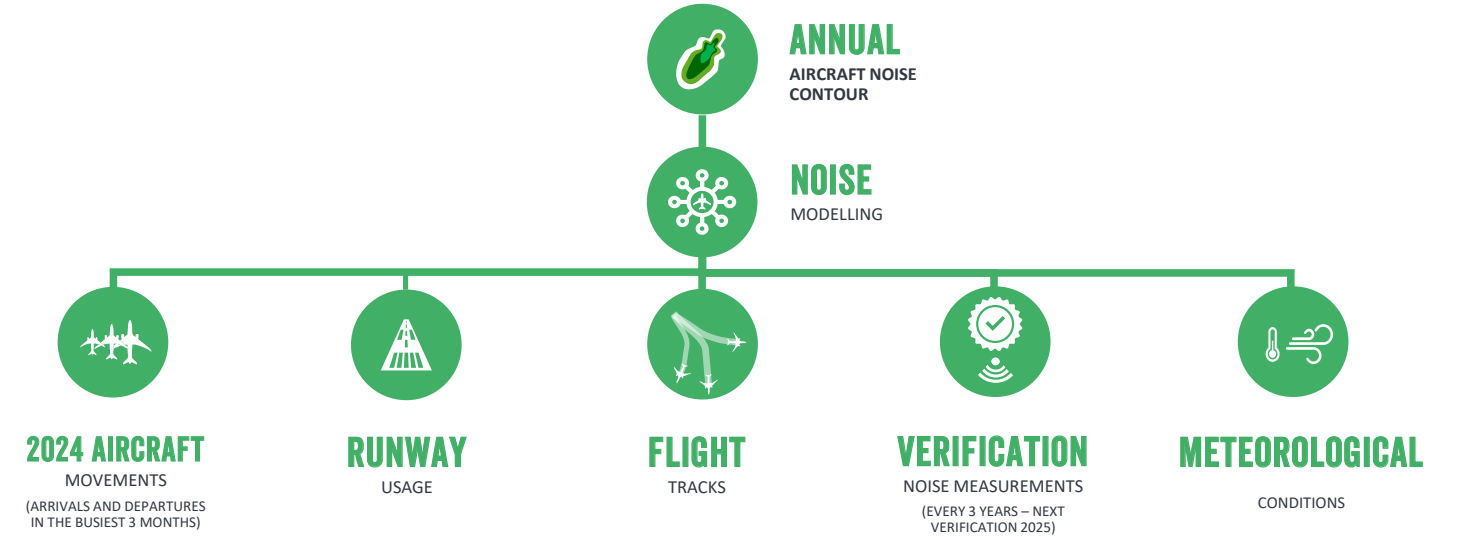


THE ANNUAL AIRCRAFT NOISE CONTOUR (AANC)?

The Annual Aircraft Noise Contour, is based on the total noise produced by all aircraft movements during a typical day, evenly measured over a rolling 90 day (3 month) busy period from the previous 12-months. This is to ensure the AANC is based on aircraft movements from the busiest time of year for the airport and also to account for variations in aircraft movements over a period of time. This is in accordance with the New Zealand Standard NZS 6805:1992 "Airport Noise Management and Land Use Planning".

HOW IS NOISE Modelled?

Calculation of the AANC is based on actual operations, fleet mix, time of day, runway usage, flight path usage and environmental conditions such as temperature, wind and humidity.

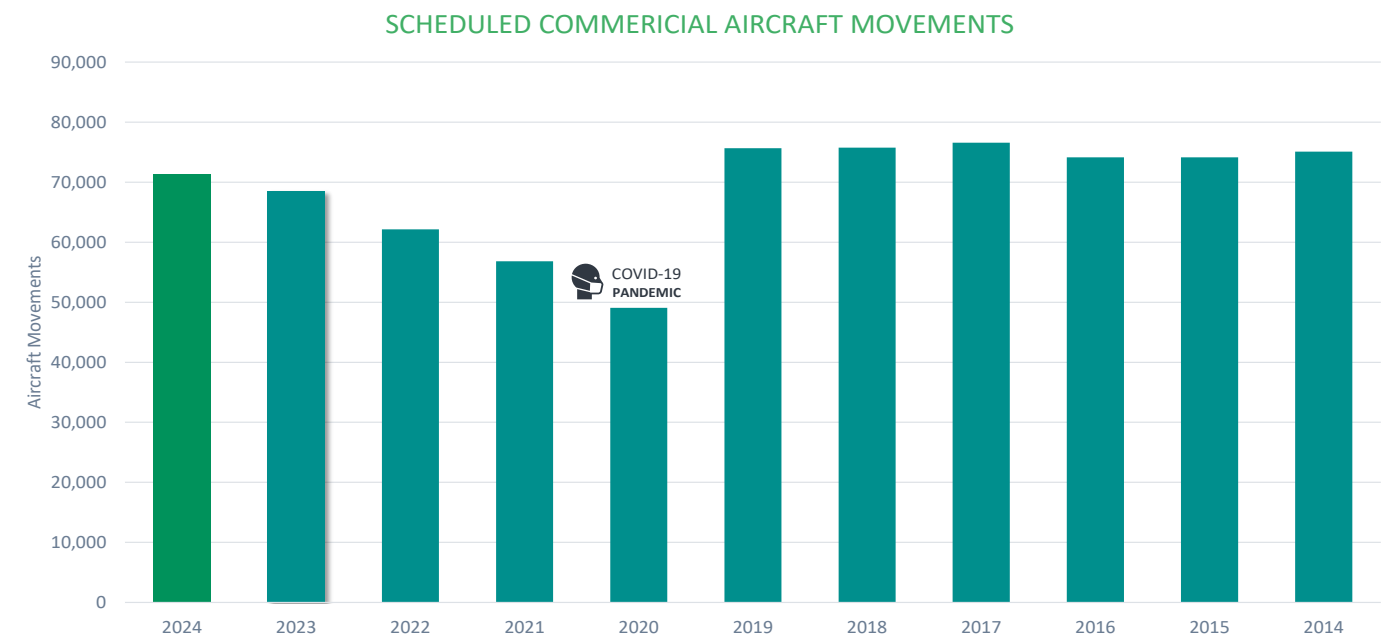


SUMMARY OF OPERATIONAL AIRCRAFT MOVEMENTS AND FLEET MIX

Prior to COVID-19, Christchurch Airport had between 80,000 and 110,000 aircraft movements annually. Aircraft movements include both arrivals and departures. Of these around 70,000 to 80,000 were scheduled commercial movements. Based on information provided by Airways, for the year 2024 there were;

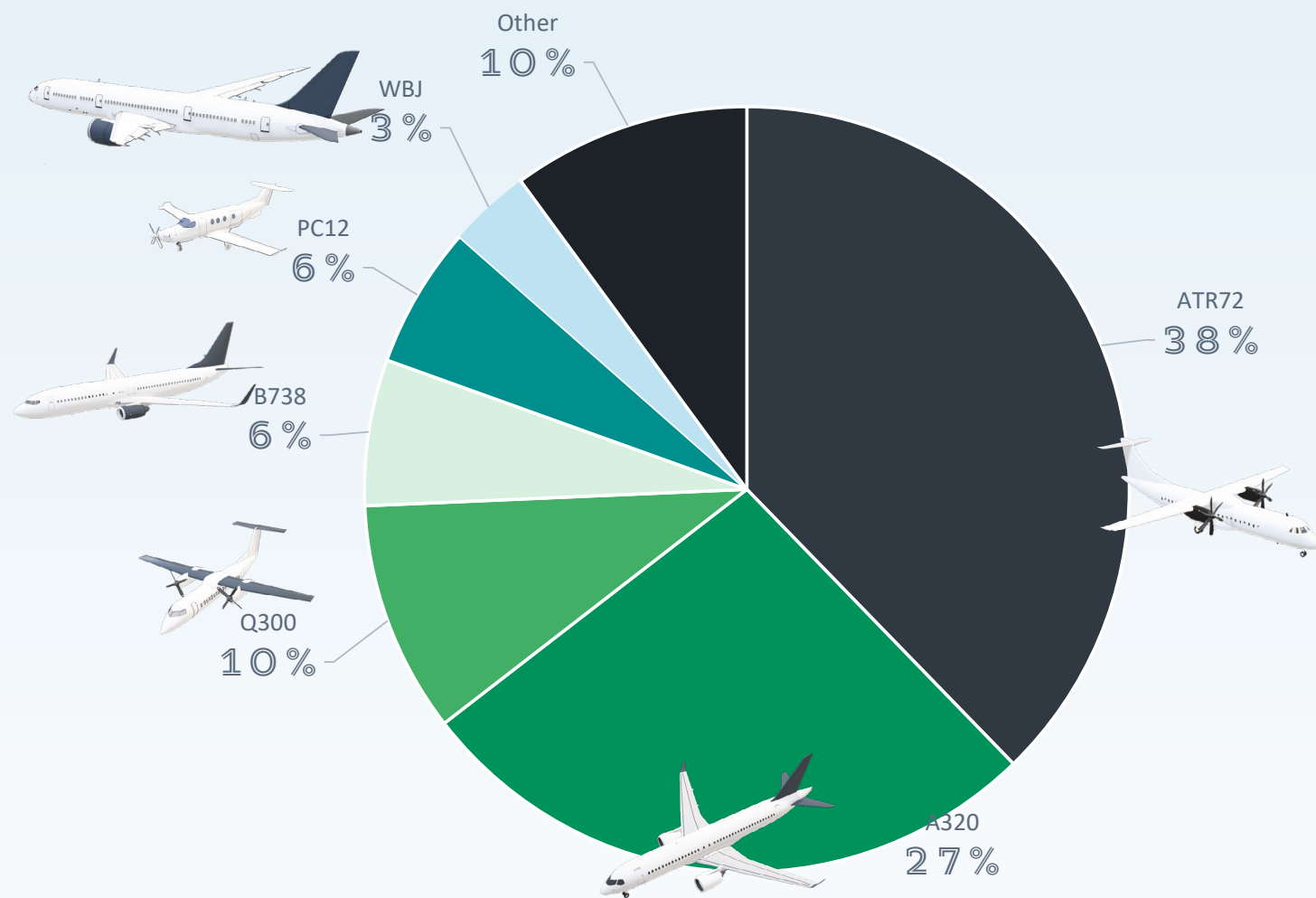
- 71,380 scheduled commercial aircraft movements, and
- 92,750 total aircraft movements.

Scheduled commercial movements over the last 10 years are as shown below:



2024 FLEET *Mix*

The overall makeup of the fleet of aircraft is considered when modelling noise contours because each type of aircraft has a different noise profile. The main aircraft types operating at Christchurch Airport for the year 2024 are illustrated in **the chart below**.



(1) Data provided by Airways
 (2) Wide Body Jet (WBJ) aircraft are predominantly characterised by their fuselage width which can accommodate two separate passenger aisles. Examples of WBJ that operate at CHC include A359, A380, B763 and B789.

2024 ANNUAL AIRCRAFT NOISE *Contour* (AANC)

The 2024 AANC shows that aircraft operations were at 3.5 decibels below the 65 dB Ldn Operative Air Noise Contour limit.
 The 2024 AANC is shown below.



ON-AIRCRAFT ENGINE Testing

Under the District Plan CIAL is required to monitor and manage noise from on-aircraft engine testing within the 65dB Ldn (7-day Ldn) and the 55dB Ldn (7 day Ldn) engine testing contours and the 75dB LAFmax (22:00 to 7:00 only) at the edge of the residential zone³. The Engine Testing Management Software (ETMS) is used to calculate noise levels emitted from on-aircraft engine testing and calculate a 7-day rolling average.

The District Plan requires that the engine testing calculation is verified with Noise Monitoring Terminals every 2 years⁴, the next verifications will occur in 2025.

The calculated noise levels for 2024 generated from the ETMS are compliant and do not exceed the noise limit at each Engine Testing Compliance Monitoring Positions

(3) Christchurch District Plan rule 6.1.6.2.6a(i)

(4) as specified in rule 6.1.6.2.6(a)(v)(B)

ACOUSTIC TREATMENT Programme

CIAL has developed an Acoustic Treatment Programme where dwellings existing as of 6 March 2017 within the Rural Urban Fringe and Rural Waimakariri zones become eligible for acoustic treatment. There are three circumstances when owners are to be offered the opportunity for acoustic treatment:

WITHIN ENGINE TESTING CONTOUR

The Engine Testing Contours remain fixed by the District Plan and no new dwellings are allowed within the contour. Therefore, there is no change to the number of eligible dwellings inside these noise contours.

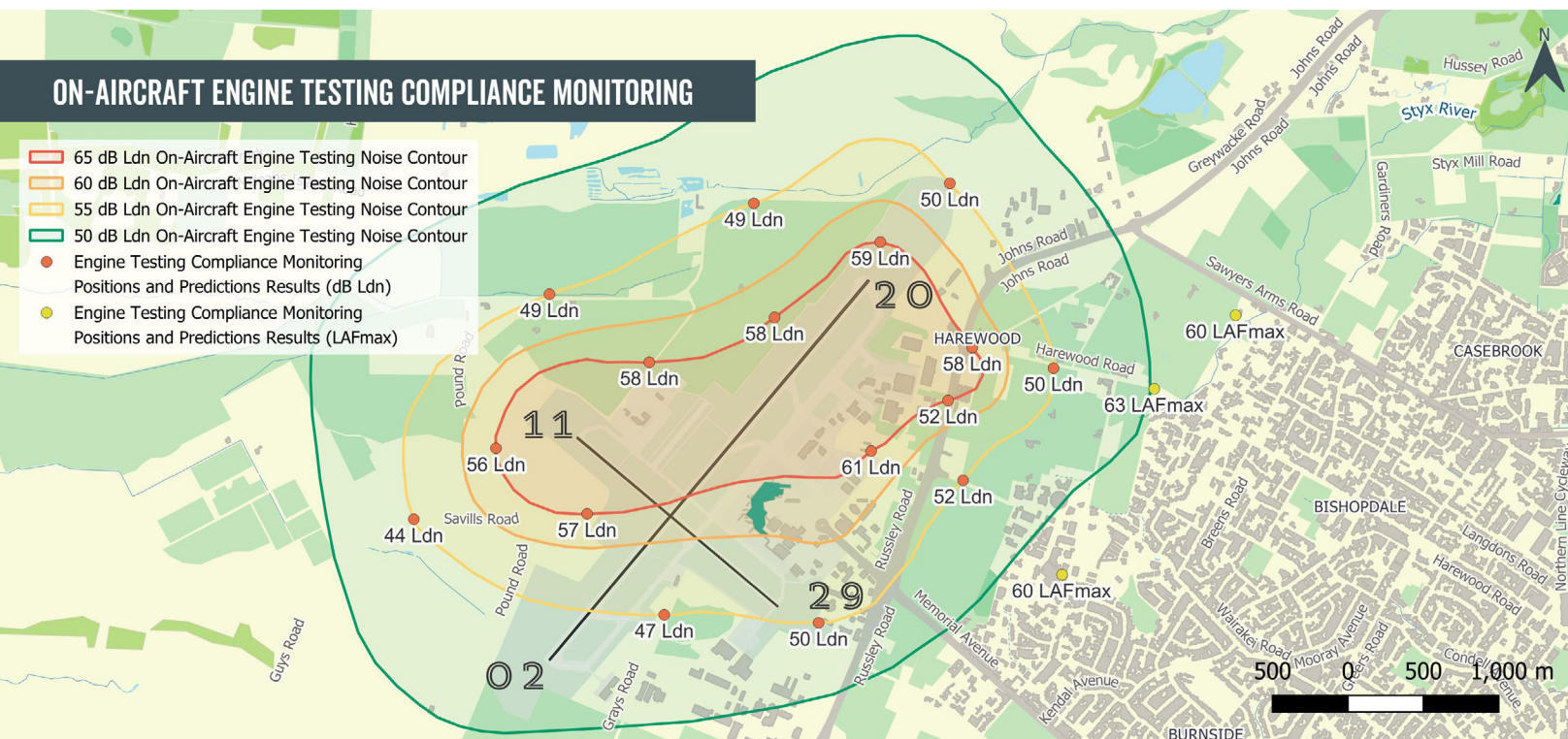
WITHIN THE AANC CONTOUR

The 2024 65dB Ldn AANC is similar in extent to 2023 AANC and incorporates no additional dwellings from the previous year.

Dwellings located within the 65 dB Ldn Annual Aircraft Noise Contour;

Dwellings located within the 65 dB Ldn Engine Testing Contour; and

Dwellings located within the 60 to 65 dB Ldn Engine Testing Contour (eligible for mechanical ventilation only).



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GOT QUESTIONS OR CONCERNS ABOUT AIRCRAFT NOISE? GET IN TOUCH!
 If you have any questions about this information booklet or wish to make a formal complaint about a specific aircraft noise event please contact us via the QR link below, [noise complaint feedback form](#) or contact us 24 hours a day on +64 3 353 7700.

This document has been prepared by Airbiz at CIALs request with reference to the 2024 Noise Monitoring report. This and previous monitoring reports and brochures can be found at: <https://www.christchurchairport.co.nz/about-us/sustainability/noise/>

