Level 5, 2 Commerce Street
PO Box 5811
Victoria Street West
Auckland 1142 New Zealand
T: +64 9 379 7822
www.marshallday.com

15 April 2026

Rotorua Regional Airport Ltd
PO Box 7221
Te Ngae
Rotorua 3042

Attention: Jayne March

2025 ACTUAL NOISE CONTOURS AND 2026 ANNUAL AIRCRAFT NOISE CONTOURS

Introduction

Marshall Day Acoustics (MDA) has been engaged to prepare projected and actual noise contours based on movements that occurred in the 2025 financial year (1 July 2024 - 30 June 2025) as per rule *Noise-S3.1.a.iii*[1] and *Noise-S4.1.a*[2] of the Reformatted Rotorua District Plan (District Plan).

The **'Actual Noise Contours'** (ANC) uses aircraft movements during the busiest three months of the 2025 financial year as these contours represent the actual noise emissions from aircraft operations in FY25 ('2025 ANC'). The purpose of these contours is to assess compliance with the noise boundaries in the District Plan.

The projected contours are termed the **'Annual Aircraft Noise Contours'** (AANC) and use the busiest three months of the 2025 financial year, with the projected growth over the next year added to produce the '2026 AANC'. The purpose of these contours is to identify which properties are eligible for acoustic treatment offers under the Noise Mitigation Programme detailed in the District Plan (Noise-S4).

Noise Rules

The noise rules that apply to the airport are contained in Part 2 General District Wide Matters of the Reformatted District Plan (February 2024).

Performance Standard Noise-S3.1.a sets a 65 dB L_{dn} noise limit on airport operations outside the Air Noise Area.

Performance Standard Noise-S3.1.a.iii requires the Airport Operator to provide a report detailing the calculated noise levels at the boundary of the Air Noise Area on an annual basis. The noise contours calculated for this rule are based on the actual aircraft activity over the previous twelve months and the purpose of the contours is to assess compliance with the Airport's noise limits.

Performance Standard Noise-S4.1.a requires the preparation of an AANC plan indicating which properties are predicted to lie within the 60 and 65 dB L_{dn} contours at a date twelve months from the date of preparation. The contours are based on the busiest three months of the preceding year with the projected growth over the next year added for the purpose of offering acoustic treatment to eligible dwellings.

[1] Previously A7.2.1(d)(iii)

[2] Previously A7.4.1

Noise Model Input and Assumptions

The 2025 ANC and 2026 AANC have been prepared using the Aviation Environmental Design Tool (AEDT) version 3g. This noise modelling software is an updated version of the Integrated Noise Model (INM), which was used to produce the airport noise boundaries in the District Plan. The use of INM is specified in the District Plan but INM is now a legacy software and AEDT was developed by the U.S. FAA to replace INM. Despite the District Plan rule specifying INM, we have used AEDT for our modelling as its use is the current industry best practice. Rotorua Airport agrees with this approach.

Aircraft movement data for FY25 was provided by the Airport Company. The busiest three consecutive months were January, February and March 2025 and the aircraft movements from these three months were used to calculate the 2025 ANC.

To calculate the 2026 AANC, the FY25 projected growth has been applied to the 2025 ANC data. To calculate the projected growth for FY26, we used a combination of actual aircraft movements numbers for the first 5 months (up to December 2025) and projected movements for the following 7 months. These movement numbers were also provided by the Airport Company. We note that the projected growth for FY26 was negative (-1.1%).

The aircraft movement data only includes details of aircraft arrivals to the airport, so it has been assumed that for every arrival a corresponding departure took place.

Runway usage has been provided by Rotorua Airport and was estimated based on typical wind patterns resulting in 60% of movements on Runway 18 (on a southerly heading) and 40% on Runway 36 (on a northerly heading). Helicopter movements have also been included in the model and use different flight tracks to fixed wing aircraft.

Noise Model Input and Assumptions

Compared to INM, AEDT has a larger and more up to date library of aircraft noise profiles. MDA has also done further calibration studies to determine suitable aircraft noise profiles for aircraft more commonly used in NZ. These calibrations have been detailed in the below table.

Table 1: Aircraft Calibration adjustments

Aircraft	Operation Type	Issue	Calibration Applied
ATR 72	Arrivals and departures	AEDT underpredicts noise emissions (generally by 2 dB)	Movement numbers increased by factor to account for the underprediction (factor = 1.5849)
ATR 72	Taxiing	AEDT underpredicts noise emissions (by 12 dB)	Movement numbers increased by factor to account for the underprediction (factor = 15.849)
Cessna 208 and Caravan GA8	Departures only	AEDT overpredicts noise emissions (by 0.9 dB)	Movement numbers reduced by factor to account for the overprediction (factor = 0.795)
Eurocopter EC-20 and EC-30 helicopters	Arrivals and departures	AEDT overpredicts noise emissions (by 8 dB)	Movement numbers reduced by a factor to account for the overprediction (factor = 0.1667)
Note:	The empirical data for these calibrations was based on a large sample of in-field measurements at multiple sites undertaken by MDA.		

Calculated 2025 ANC

Figure 1 shows the calculated 65 dB L_{dn} noise contour for the 2025 ANC compared with the District Plan Air Noise Area. This figure shows that the 2025 65 dB L_{dn} contour lies comfortably within the Air Noise Area and therefore aircraft noise complied with the limit.

Calculated 2026 AANC

Figure 2 compares the predicted 2026 AANC (60 and 65 dB L_{dn} contours) with the previous year (2025), whereas Figure 3 compares the predicted 2026 AANC to the busiest pre-pandemic year (2019). We have used the 2019 AANC as a benchmark because it represents the largest recent AANC before the pandemic-related reduction in aircraft operations and corresponding noise (which are gradually returning to pre-pandemic levels).

Compared to the 2025 and 2019 AANC, the 2026 AANC 65 dB L_{dn} contour is smaller and the 60 dB L_{dn} contour is slightly wider. The widened 60 dB L_{dn} contour is mainly due to the taxi-ing noise component that has now been calibrated in the AEDT software. Other overall differences in shape are due to the use of AEDT in our calculations (as it includes more accurate aircraft noise profiles).

The purpose of the 2026 AANC is to identify whether any new houses are eligible for an offer for acoustic treatment. When compared to previous AANC, the 2026 AANC may contain new properties in the 60-65 dB L_{dn} bracket. Therefore, it is likely that new properties could be eligible for acoustic mitigation that have not previously received offers.

A digital copy of the 2026 AANC will be provided to Rotorua District Council to identify which properties are eligible that have not previously received an offer.

Yours faithfully

MARSHALL DAY ACOUSTICS LTD

Stephanie King

Acoustic Engineer

Enclosed:	Figure 1	2025 Actual Noise Contours
	Figure 2	2026 AANC & 2025 AANC 60 & 65 dB L_{dn}
	Figure 3	2026 AANC & 2019 AANC 60 & 65 dB L_{dn}

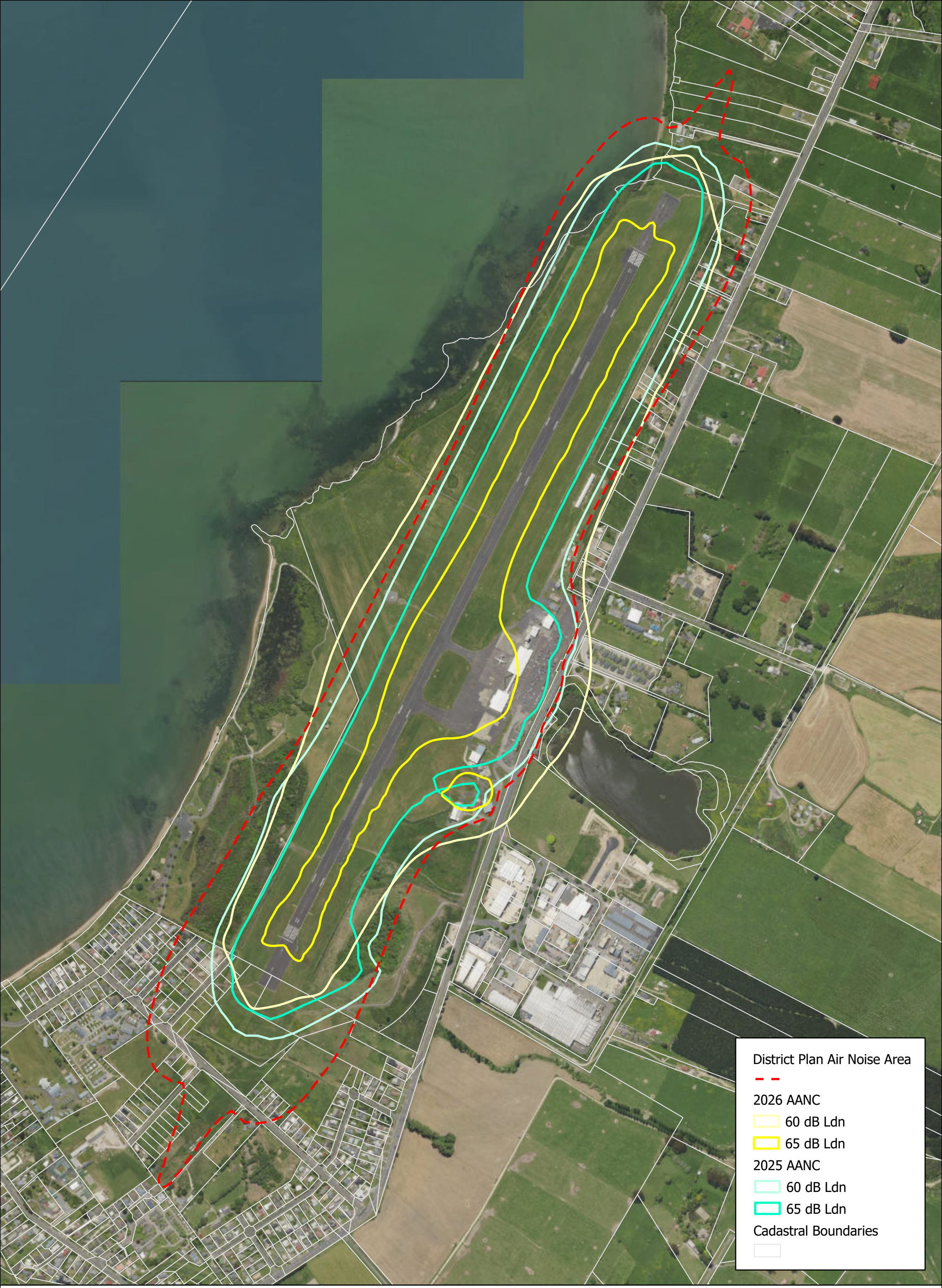
MARSHALL DAY Acoustics

Figure 1 - Rotorua Airport 2025 Actual Noise Contour 65 dB Ldn

Prepared by: SRK
Date: 8/04/2026

0 0.05 0.1 0.2
km

N



MARSHALL DAY Acoustics

Figure 2 - Rotorua Airport 2026 and 2025 Annual Aircraft Noise Contours

Prepared by: SRK
Date: 8/04/2026
0 0.05 0.1 0.2
km

N

District Plan Air Noise Area

2026 AANC

60 dB Ldn

65 dB Ldn

2019 AANC

60 dB Ldn

65 dB Ldn

Cadastral Boundaries

MARSHALL DAY Acoustics

Figure 3 - Rotorua Airport 2026 and 2019 Annual Aircraft Noise Contours

Prepared by: SRK
Date: 8/04/2026

0 0.05 0.1 0.2 km

N