MARSHALL DAY Acoustics

CHRISTCHURCH AIRPORT NOISE MONITORING 2025 NOISE MONITORING REPORT

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Project: **CHRISTCHURCH AIRPORT NOISE MONITORING**

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DEFINITIONS AND ACRONYMS

Definitions

Aircraft Operations	Also referred to as 'Operational Noise' (refer Section 6.1) a) the landing and take-off of aircraft; and b) aircraft flying along any flight path associated with a landing or take-off. For the purposes of Rule 6.1.6 Activity specific noise rules, it excludes: a) aircraft operating in an emergency for medical or national/civil defence reasons; b) air shows; c) military operations; d) Antarctic operations; e) helicopter operations; f) aircraft using the airport as an alternative to a scheduled airport elsewhere; g) aircraft taxiing; and h) aircraft engine testing.
Air Noise Compliance Contour	The 65 dB L_{dn} noise contour included in the Christchurch District Plan that cannot be exceeded. The determination of compliance or otherwise with this control is demonstrated by the preparation of the AANC for the preceding year's aircraft operations and reported annually.
Air Noise Boundary (ANB)	A composite line formed by the outer extremity of the 65 dB L_{dn} noise contour and the 95 dB L_{AE} noise contour. The Air Noise Boundary defines an area in which the future daily aircraft noise exposure from aircraft operations is sufficiently high as to require prohibition on new sensitive activities
Decibel (dB)	The unit of sound level. Expressed as a logarithmic ratio of sound pressure relative to a reference pressure
General Aviation	Civil aviation operations other than scheduled air services and non-scheduled air transport operations for remuneration or hire
L_{AE}	The Sound Exposure Level. The sound level of one second duration which has the same amount of energy as the actual noise event measured. Usually used to measure the sound energy of a particular event, such as an aircraft flyover
L_{Aeq}	The equivalent continuous (time-averaged) A-weighted sound level. This is commonly referred to as the average noise level.
L_{dn}	The day night noise level which is calculated from the 24-hour L_{Aeq} with a 10dB penalty applied to the night-time (2200-0700 hours) L_{Aeq}
L_{AFmax}	The A-weighted maximum noise level. The highest noise level which occurs during the measurement period.
Noise Calculations	Noise levels calculated using computer modelling software, typically to predict current and future noise levels. Noise measurements are used to verify accuracy of calculated noise levels.
Noise Measurements	In-situ noise measurements of actual noise levels using either semi-permanent noise monitoring terminals or hand-held equipment (sound level meters).
Noise Monitoring	Monitoring of noise levels (generally with respect to assessing compliance with the District Plan), using both noise measurements and calculated noise levels.
On-Aircraft Engine Testing	The testing of engines on aircraft.

Acronyms

AANC	Annual Aircraft Noise Contour
ANB	Air Noise Boundary
ANLC	Airport Noise Liaison Committee
CIAL	Christchurch International Airport Limited
ETMS	Engine Testing Management Software
GA	General Aviation
INMP	Integrated Noise Modelling Program
NMP	Noise Management Plan
NMR	Annual Noise Monitoring Report
NZS 6805	New Zealand Standard NZS 6805:1992 "Airport Noise Management and Land Use Planning"
USAP	United States Antarctic Programme

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1.0 INTRODUCTION

Christchurch International Airport Limited (CIAL) is required to prepare an Annual Noise Monitoring Report each year in accordance with the provisions of Chapter 6 of the Christchurch District Plan (CDP).

This report has been prepared by Marshall Day Acoustics (MDA) on behalf of CIAL and provides an overview of the noise monitoring programme for 2025 including:

- Calculation of noise contours known as the Annual Aircraft Noise Contours (AANC) to determine compliance;
- Analysis of measured aircraft operations noise levels, to verify the calculated AANC;
- Calculation of engine testing noise level emissions at the Engine Testing Compliance Monitoring Positions (ETCMPs) to determine compliance;
- Analysis of measured engine testing noise levels to verify the compliance calculations;
- Update of the Acoustic Treatment Programme (ATP) schedule of eligible dwellings; and
- A summary of noise complaints.

2.0 STATUTORY REQUIREMENTS

The full list of rules relating to airport noise compliance at Christchurch is given in Appendix A.

Rule 6.1.6.2.5a.iv of the Christchurch District Plan requires CIAL to prepare and submit annually an aircraft operations noise monitoring report, including the following information:

- the calculated AANC;
- the results of the verification measurements (if conducted);
- analysis of compliance with reference to Rule 6.1.6.2.5a.i and ii (including the number of exceedances and the reasons for them); and
- a summary of complaints received over the previous year in relation to noise from aircraft operations, and any actions taken in response.

Rule 6.1.6.2.6a.vii of the Christchurch District Plan requires CIAL to prepare and submit annually an on-aircraft engine testing noise monitoring report, including the following information:

- the results of verification measurements in accordance with activity standard v.B; and
- analysis of compliance with reference to Rule 6.1.6.2.6a.i; and
- a summary of complaints received over the previous year in relation to noise from on-wing aircraft engine testing, and any actions taken in response.

Rule 6.1.6.2.7.2 of the Christchurch District Plan sets out the requirements for CIAL to implement an Acoustic Treatment Programme (ATP) and identify annually if additional dwellings become eligible for treatment within the AANC 65 dB L_{dn} contour.

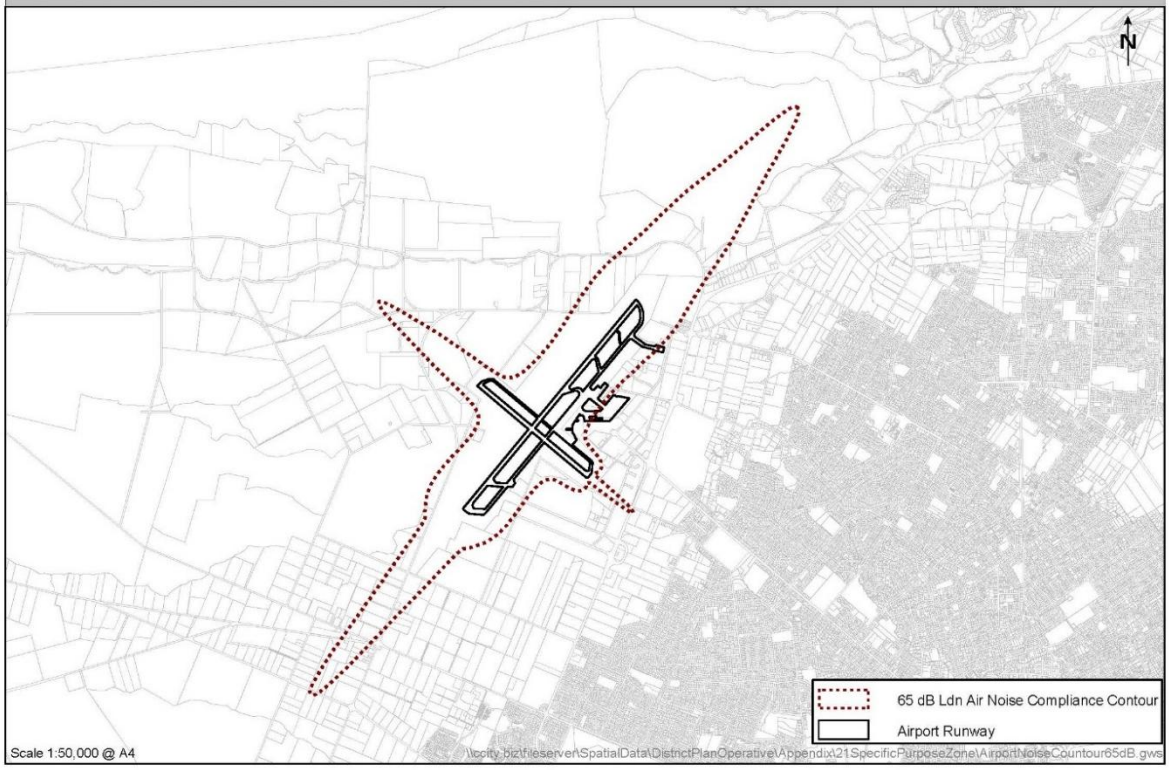
The following noise monitoring report details information required under both 6.1.6.2.5a.iv (aircraft operations) and 6.1.6.2.6a.vii (on aircraft engine testing) and under 6.1.6.2.7.2b.ii provides an updated schedule of eligible dwellings for the ATP. The purpose of this report is to assess compliance of aircraft operations with rule 6.1.6.2.5a and on-aircraft engine testing with rule 6.1.6.2.6a.i and v for the period of 1 January 2025 to 31 December 2025.

2.1 Noise Limits - Aircraft Operations

Aircraft operational noise limits are set in rule 6.1.6.2.5a.i:

"Noise from aircraft operations shall not exceed 65 dB Ldn outside the 65 dB Ldn Air Noise Compliance Contour shown in Figure 1, other than as provided for in Rule 6.1.6.2.5a.ii."

Figure 1: Map of 65 dB Ldn Air Noise Compliance Contour



insert from rule 6.1.6.2.5a.i in the Christchurch District Plan.

Rule 6.1.6.2.5a.iii of the District Plan describes the noise monitoring required to determine compliance with rule 6.1.6.2.5a.i.

2.2 Noise Limits - On Aircraft Engine Testing

Table 5 in rule 6.1.6.2.6a of the District Plan sets out noise limits for on-aircraft engine testing. These are reproduced in Table 1 below.

Table 1: On-aircraft engine testing noise limits

Noise Limit	Engine testing compliance monitoring positions (ETCMP) refer Figure 2 in Appendix A
65 dB L_{dn}, 7 day	8 points
55 dB L_{dn}, 7 day	8 points
75 dB L_{Amax} 22:00 to 07:00 only	Edge of residential zone – 3 points

Rule 6.1.6.2.6a.v of the District Plan describes the monitoring required to determine compliance with rule 6.1.6.2.6a.

3.0 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, aircraft taxiing and aircraft engine testing.

3.1 Summary of Operational Aircraft Movements

Prior to COVID-19, Christchurch Airport had approximately 80,000 - 110,000 aircraft movements per year, of which around 75,000 to 80,000 were categorised as scheduled movements.

The pandemic caused a sudden decrease in operations in 2020 and aircraft movements have gradually increased since then. In 2025 aircraft movement numbers have almost returned to pre-pandemic levels. Aircraft movement data from Airways Corporation NZ for the year 2025 shows there were:

- 73,502 scheduled aircraft movements, and
- 98,220 total aircraft movements.

Commercial passenger and freight movements over the last 8 years are as shown in Table 2 below.

Table 2: Commercial Aircraft Movements

Aircraft Movements	2025	2024	2023	2022	2021	2020	2019	2018
Scheduled Movements	73,502	71,380	68,521	62,143	56,813	49,084	75,663	75,738

The busiest three months for aircraft operations (as defined in the Christchurch District Plan) in 2025 were January, February and March. A summary of the aircraft movement data from this period used to calculate the 2025 Annual Aircraft Noise Contours (AANC) is provided in section 3.2 of this report.

3.2 Modelling Methodology

The 2025 AANC has been calculated using the Aviation Environmental Design Tool (AEDT3e) developed by the US Federal Aviation Authority. This is the same software used to calculate the AANC since 2022. Prior to that, AANC were calculated using the Integrated Noise Model (INM) software to be consistent with the software used to produce the Christchurch District Plan contours. The INM has been replaced by the AEDT and is no longer supported or updated with data for new aircraft types. In New Zealand there is no national statutory requirements for noise modelling software and the Christchurch District Plan does not define the software to be used.

The AEDT has been used for AANC since 2022 for the following reasons:

- AEDT contains noise data for newer aircraft types that are now prevalent in New Zealand whereas the INM does not;
- Recent flight path analysis for Christchurch Airport has been modelled in AEDT rather than INM meaning the AEDT model contains more accurate flight paths for current operations.

A review of the AEDT shows that predicted noise levels are very similar to the INM for the same operational scenarios therefore is reasonably consistent with the software used to produce the Christchurch District Plan contours.

The 2025 AANC is based on aircraft movements provided by Airways Corporation NZ. The AANC includes aircraft movements from the Airways data that is categorised as scheduled, non-scheduled and other but excludes emergency medical, military, Antarctic, helicopter and general aviation (GA) movements. Rule 6.1.6.2.5a.iii.B requires that the AANC is calculated for actual aircraft operations over the busiest three-month period of the previous year. The definition of aircraft operations in the Christchurch District Plan (given in Appendix A) excludes emergency, military, Antarctic and helicopter movements therefore these are not included in the AANC calculation.

General aviation (GA) operations were not included in the CDP 65 dB L_{dn} Air Noise Compliance Contour therefore, the AANC has also been calculated without GA movements. At the time the CDP Air Noise Compliance Contour was calculated, it was considered that GA aircraft, which are typically light aircraft, would not significantly affect the extent of the noise contours.

This assumption was tested in the 2009 CIAL Noise Monitoring Report. MDA calculated the effect of GA operations on the AANC and concluded that GA operations typically contribute less than 0.1 dB to the noise contours which is a negligible difference. Every year, the ratio of GA movements to scheduled movements is reviewed to verify that this conclusion remains valid. In 2025 the ratio of scheduled aircraft to GA was 3.5:1 whereas in 2009 the ratio was 1.5:1 which confirms the findings of the 2009 assessment are still valid for 2025.

A summary of the relevant aircraft operations for each month in 2025 and the rolling three-month sum is shown in Table 3. The busiest three months for 2025, were January, February and March.

Table 3: Summary of 2025 aircraft operations for AANC assessment

Month (2025)	Monthly total	Consecutive 3 months total
Jan	6,340	-
Feb	6,110	-
Mar	6,581	19,031
Apr	6,183	18,874
May	6,217	18,981
Jun	5,810	18,210
Jul	6,123	18,150
Aug	6,082	18,015
Sep	6,099	18,304
Oct	6,096	18,277
Nov	6,300	18,495
Dec	6,590	18,986

Table 4 shows the aircraft operations for the busiest three months in 2025 with a breakdown of daytime and night-time movements. Night-time movements are those that occur between 10pm and 7am. The number of night-time movements is relevant as night-time activity receives a +10 decibel weighting when calculating L_{dn}.

A breakdown of the average daily aircraft operations by aircraft type, time and runway for the busiest three months is included in Table C1, Appendix C.

Table 4: Summary of modelled aircraft operations

	Busiest 3 Months (Jan, Feb, Mar 2025)
Total Movements	19,031
Day Time Movements	16,663
Night-time Movements	2,368

3.3 Crosswind Runway Utilisation

Data provided by Airways includes actual runway usage data which has been used in the preparation of the 2025 AANC. Christchurch Airport has four operational runway vectors, two on the main runway (02 and 20) and two on the crosswind runway (11 and 29). A diagram of the Christchurch Airport runway system is included in Appendix B for reference.

Runways 02 and 20 are used for the majority of aircraft operations. Runways 11 and 29 are used less frequently and are generally utilised during periods of strong crosswind conditions and during maintenance on the main runway. Runway 11 is rarely used, whereas runway 29 experiences increased use during spring when north-westerly wind conditions are more prevalent. Historically, this results in the October–December period being the busiest period for runway 29 utilisation.

In accordance with Rule 6.1.6.2.5a of the Christchurch District Plan, compliance with aircraft operational noise limits is assessed using the busiest consecutive three-month period of aircraft operations from the preceding year. For 2025, the busiest three-months were January – March and this period has therefore been used to calculate the 2025 AANC for compliance purposes.

The busiest period for Runway 29 utilisation in 2025 did not coincide with the busiest three-month operational period. As shown in Table 5, Runway 29 accounted for approximately 9% of runway use during October–December, compared with approximately 1% during January–March.

Table 5: Runway utilisation in 2025

Runway	January – March	October – December	12 Months
Main Runway 02-20	99%	91%	97%
Cross Runway 11-29	1%	9%	3%

While the Christchurch District Plan does not require additional noise contour assessment outside the busiest three-month period used for the AANC, CIAL considers it appropriate to include this supplementary information to provide greater visibility regarding seasonal aircraft operational noise patterns. Accordingly, MDA has calculated an additional 65 dB Ldn noise contour for the October – December 2025 period. This contour is provided for information purposes only and does not form part of the compliance assessment.

The October–December 2025 contour illustrates noise levels during the period of highest utilisation of Runway 11/29. This highlights areas near Runway 29 where aircraft noise continues to advance towards the Air Noise Compliance Contour, particularly in years where the busiest three-month period of aircraft operations aligns with the busiest three-month period for Runway 11/29 and when accompanied by a higher prevalence of north-westerly wind conditions.

Given the substantive changes in aircraft operations since the operative noise contours were developed nearly two decades ago, this analysis underscores the importance of incorporating the remodelled 2023 Updated Noise Contours into the District Plan, as they provide the most up to date and robust basis for understanding both present and future aircraft noise exposure.

Appendix E addresses the calculated 65 dB L_{dn} aircraft noise contour for the October – December 2025 period.

3.4 Flight Tracks

The flight tracks used in the model are based on recent analysis of actual flown flight tracks at Christchurch Airport using radar data[1]. In the noise model, aircraft have been allocated to flight tracks based on aircraft type and destination/origin which was determined from the radar data analysis. MDA undertook a review of flown flight track data from October 2025 to verify the flight track geometry and allocation assumptions in the model. MDA identified some changes and these were discussed with a representative of Airways NZ, CIAL and MDA in December 2025. The agreed changes implemented in the 2025 noise model included adjustments to the dispersion for some tracks and adjustments to flight track allocations (e.g. more aircraft using instrument approaches than Required Navigation Performance approaches).

Airways NZ advised there were no significant planned changes to flight paths for the coming year and supported the proposed approach. Airways NZ concluded the flight tracks in the 2025 noise model are a reasonable approximation of the average flight tracks flown.

3.5 Verification Noise Measurements

Rule 6.1.6.2.5a.iii.D of the Christchurch District Plan sets out that the calculated AANC shall be verified by noise measurements carried out in accordance with the Airport Noise Management Plan (NMP). Section 6.1.2 of the NMP states that verification measurements are to be carried out no less than every three years. Verification measurements were last carried out in 2022 and therefore were due again in 2025.

CIAL engaged Envirosuite Ltd to support noise monitoring, with the installation of four permanent noise monitoring terminals fully commissioned at the beginning of 2025 to measure noise from aircraft operations. The monitors are located near the extended runway centreline for each of the four runway vectors 02, 20, 11, 29 and near the 65 dB L_{dn} Compliance Contour as shown in Figure 1.

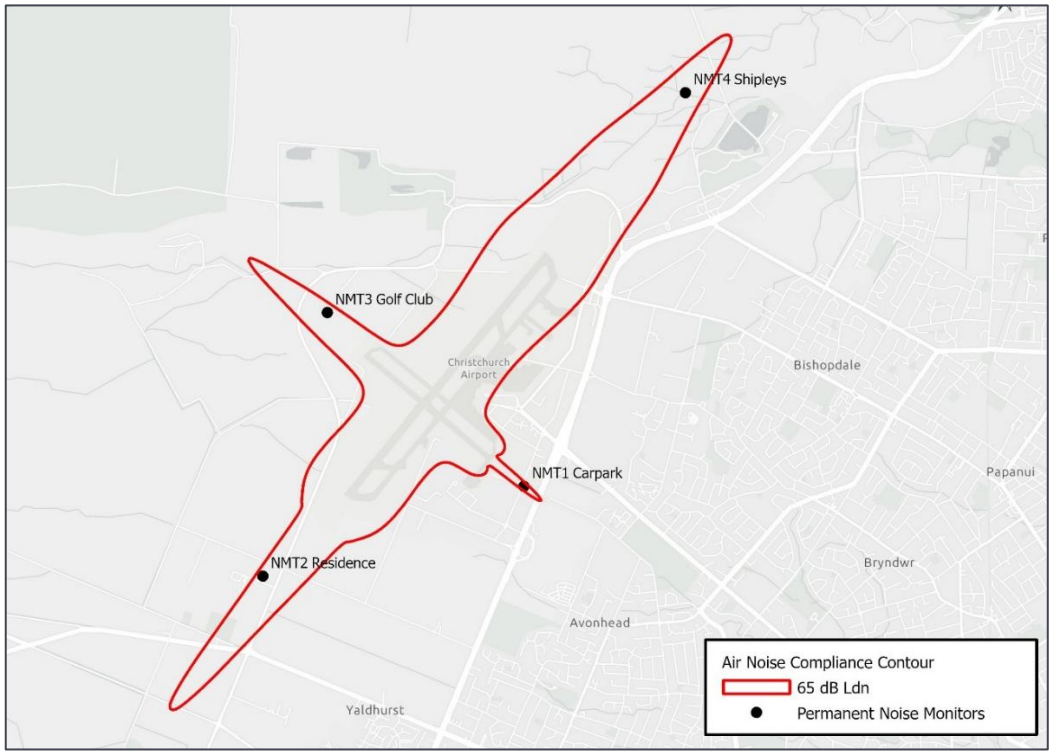
Although the monitors are near the 65 dB L_{dn} Compliance Contour they are not exactly on the contour. The equivalent permitted noise level at each monitor ranges from 66 to 67 dB L_{dn}. Table 6 provides a summary of the permanent monitor locations.

Table 6: Permanent noise monitoring terminals

Noise Monitoring Terminal ID	Location Name	Runway Approach	Equivalent Compliance Level
NMT 1 (RW29 approach)	Carpark	29	67
NMT 2 (RW02 approach)	Residence	02	66
NMT 3 (RW11 approach)	Golf Club	11	67
NMT 4 (RW20 approach)	Shipley	20	67

[1] 12 months of radar data from 2022 verified and adjusted with radar data from October 2025.

Figure 1: Permanent noise monitoring terminal locations



The monitors provide continuous noise data via the mobile network to a database managed by Envirosuite. Aircraft movement data is also collected in the database. The Envirosuite software correlates measured noise data from each monitor with aircraft movements in the vicinity, thereby identifying and quantifying aircraft operations noise separately from all other noise. The software uses the correlated noise data to calculate the daily L_{dn} from aircraft operations and this can be used to calculate the average L_{dn} from aircraft operations over any period of time.

The permanent monitoring system provides the noise measurement data required to verify the AANC model in accordance with rule 6.1.6.2.5a.iii.D. The average L_{dn} from aircraft operations measured at each monitor over the busiest three-months is listed in Table 7. The modelled AANC L_{dn} noise level at the monitor locations is also listed for comparison.

Table 7: Verification noise measurements summary

Noise Monitoring Terminal Location	Average L_{dn} for Aircraft Operations (3 months Jan – Mar 2025)	
	Measured	Modelled
NMT 1 (RW29 approach)	50	51
NMT 2 (RW02 approach)	63	64
NMT 3 (RW11 approach)	46	49
NMT 4 (RW20 approach)	62	62

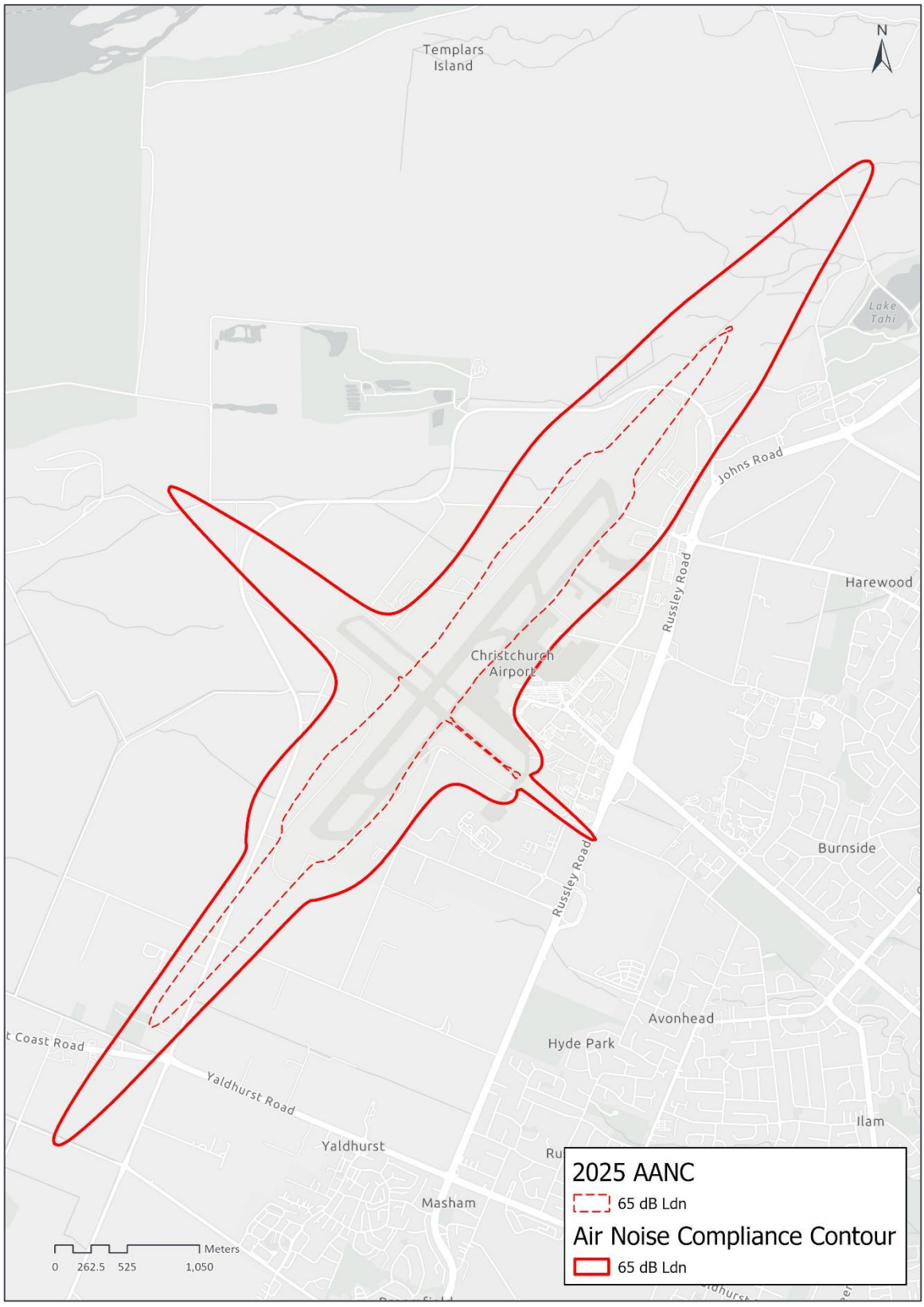
The modelled noise levels are within one decibel of the measured levels at three of the four locations which demonstrates good correlation. The modelled level at NMT 3 is three decibels above the measured level which is an acceptable tolerance in this case given the model has overpredicted. At all four locations the model is either the same or greater than the measured level which verifies that the model is conservative and appropriate for assessing compliance.

For information, Appendix E contains the average measured L_{dn} from aircraft operations for the October – December period and the entire year.

3.6 2025 Annual Aircraft Noise Contour

The calculated 2025 AANC is shown below in Figure 2. The 2025 AANC demonstrates that aircraft operations comply with the 65 dB L_{dn} Air Noise Compliance Contour.

Figure 2: 2025 AANC



To the southwest, the 2025 AANC contour is approximately 3 dB within the Air Noise Compliance Contour. To the northeast, it is approximately 4 dB within the Air Noise Compliance Contour. For the crosswind runway vectors to the northwest and southeast, the 2025 AANC is at least 10 dB within the Air Noise Compliance Contour.

Overall, the 2025 AANC provides a reasonable and conservative representation of aircraft noise exposure around the airport for the busiest three months in 2025 and has been calculated in accordance with the relevant requirements of the CDP, CIAL's NMP and New Zealand Standard NZS 6805:1992 *Airport Noise Management and Land Use Planning*.

In accordance with the rule contained in Appendix 6.11.14a.ii.C of the CDP, the 2025 AANC showing one decibel increments from 55 dB to 70 dB L_{dn} is shown in Appendix D.

The noise modelling, aircraft movement analysis and AANC calculation was conducted by a person suitably qualified and experienced in airport noise modelling and acoustics assessments, in accordance with rule 6.1.6.2.5a.iii.C. The person who undertook the airport noise modelling, acoustical assessment and preparation of the technical content of this 2025 NMR is the author of this report, Laurel Smith of Marshall Day Acoustics.

4.0 ON-AIRCRAFT ENGINE TESTING

As defined in the Christchurch District Plan on-aircraft engine testing includes the testing of engines on an aircraft. It excludes off-wing engine testing, such as the operation of engine test cells.

4.1 Summary of On-Aircraft Engine Testing

Based on information obtained from the Engine Testing Management Software (ETMS), for the year 2025 there were:

- 537 successfully completed on-wing engine tests made up of:
  - 328 turboprop tests
  - 131 jet tests
  - 78 other tests (including those associated with Antarctic operations).

The total number of recorded engine testing events over the last 8 years is as follows.

Table 8: Engine testing events by year

Engine Testing Events	2025	2024	2023	2022	2021	2020	2019	2018
Number of completed tests	537	632	856	623	843	1045	1114	1369

4.2 Verification Noise Measurements

Rule 6.1.6.2.6.v.B, in the CDP states that the engine testing calculations "*shall be verified by measurements undertaken with reference to at least four ETCMPs for a sample of at least two different on-aircraft engine test configurations*".

The definition of the engine test configuration has been agreed between CIAL and CCC, to mean consideration of two different engine test events with at least one of the following being different between the tests: aircraft type, location of test, orientation or power setting.

The rule requires that measurements be undertaken "*at least once every two years*". Measurements were carried out in 2025 as the previous engine testing measurements were conducted in 2023.

4.2.1 Measurement Methodology

Noise Monitoring Terminals (NMTs) were deployed at four monitoring positions (ETCMPs). The terminal deployments are detailed in Table 9. An additional NMT was placed adjacent to the Ground

Run-Up Pad (GRUP) for the survey duration. The purpose of this monitor is to provide a time reference that confirms engine testing was taking place at the GRUP, but data from this NMT is not used to determine compliance as it was not at one of the ETCMPs.

Table 9: ETCMP noise monitoring dates

ETCMP	Start Date	End Date	Number of Tests
4 – Threshold Runway 20 8 – Near fire training area	12 November 2025	27 November 2025	33
6 – Aviation Drive 16 – Threshold Runway 29	27 November 2025	9 December 2025	16

Each NMT consisted of a 01dB 'Cube' noise logging monitor. Data was recorded in one second intervals. Each NMT is equipped with audio recording capability to enable an analysis of individual engine testing events.

4.2.2 ETMS Verification Assessed Configurations

Measured noise levels for three different engine testing configurations at each deployment location have been compared with the corresponding noise level used in ETMS calculations. High-power test events were chosen as these are the loudest events which means the data is less likely to be contaminated by extraneous noise. The following summarises the selected configurations.

Engine Testing Configurations

The engine testing configurations used for the verification are:

- Configuration 1 – ATR 72, high power, ground run-up pad
- Configuration 2 - A320, high power, ground run-up pad (two separate events, one for each NMT pair)
- Configuration 3 – ATR 72, high power, threshold runway 11

The rationale for these choices is given below:

Configuration 1 – ATR 72 high power, ground run-up pad

High power turboprop (ATR and Q300) engine testing is the highest noise level event that occurs frequently at night. Because two NMTs were deployed at a time, separate engine-test events were required to capture data for each deployment. A representative event for each NMT was identified on:

- ETCMP 4 & 8 – 0215 hrs, 25 November 2025. ATR 72 (ZK-MVH), high power for 3 minutes
- ETCMP 6 & 16 – 1615 hrs, 3 December 2025. ATR 72 (ZK-MVU), high power for 6 minutes

Configuration 2 – A320ceo, high power, ground run-up pad

A320 family aircraft are only tested at high power during the daytime unless the test is 'Unplanned'. Because two NMTs were deployed at a time, separate engine-test events were required to capture data for each deployment. A representative event for each NMT was identified on:

- ETCMP 4 & 8 – 1500 hrs, 12 November 2025. A320 (ZK-OXE), high power for 4 minutes
- ETCMP 6 & 16 – 2115 hrs, 1 December 2025. A320 (ZK-OXA), high power for 5 minutes

Configuration 3 – ATR 72, high power, threshold Runway 11

An additional configuration has been included to capture activity on the Runway 11 threshold for completeness. Measurements were obtained as follows:

- ETCMP 4 & 8 – 2245 hrs, 15 November 2025. ATR 72 (ZK-MZA), high power for 10 minutes
- ETCMP 6 & 16 – 0302 hrs, 4 December 2025. ATR 72 (ZK-MVZ), high power for 3 minutes

4.2.3 ETMS Verification Results

Configuration 1 – ATR 72 high power, ground run-up pad

The table below shows the measured noise levels at the ETCMPs for Configuration 1 and the corresponding noise level used in ETMS calculations.

Table 10: ETMS model correlation for ATR 72 at full power at the run-up pad

ETCMP Number	Measured dB L_{Aeq}	Predicted dB L_{Aeq}	Difference to calculated level, dB
4	49.4	67.2	-17.8
6	56.4	56.1	0.3
8	45.9	51.6	-5.7
16	52.0	61.4	-9.4

The predicted noise levels show good correlation with the measurements for ETCMP6. ETCMP6 showed inconsistencies with the modelled data in the 2023 survey but shows very close correlation this year.

The measurement results at ETCMP4, ETCMP8 and ETCMP16 were significantly lower than the predicted values. The reason for the variance is uncertain but is likely to be due to wind direction. For all three locations, the wind direction during the event would have reduced the propagation of sound towards the noise monitor. This demonstrates that the predicted level is conservative under these wind conditions.

Configuration 2 – A320, high power, ground run-up pad

The table below shows the measured noise levels at the ETCMPs for Configuration 2 and the corresponding noise level used in ETMS calculations.

Table 11: Comparison of measured and predicted noise levels for A320 high power engine tests

ETCMP	Measured, dB L_{Aeq}	Predicted, dB L_{Aeq}	Difference, dB
4	62.3	68.7	-6.4
6	46.9	57.4	-10.5
8	61.6	59.1	2.5
16	50.6	54.6	-4.0

The measured noise levels are lower than the predicted values at all positions except ETCMP8 where the difference was 2.5 dB which is not significant. The largest difference was -10.5 dB at ETCMP6. The measured levels are mostly a clear indication that measured noise levels were comfortably below the predicted levels in most cases.

Configuration 3 – ATR 72, high power, threshold Runway 11

The table below shows the measured noise levels at the ETCMPs for Configuration 3 and the corresponding noise level used in ETMS calculations.

Table 12: Comparison of measured and predicted noise levels for ATR 72 high power engine tests

ETCMP	Measured, dB L_{Aeq}	Predicted, dB L_{Aeq}	Difference, dB
4	48.2	51.8	-3.6
6	67.7	67.1	0.6
8	66.2	70.2	-4.0
16	54.3	53.2	1.1

The measured values generally show strong correlation between the measured and predicted values. We note that the Runway 11 threshold generally has a clear line-of-sight to each of the monitoring positions, so there is expected to be less variability in the measurement results.

4.2.4 Summary

Engine testing noise verification measurements have been carried out in accordance with rule 6.1.6.2.6.v.B. The measurements demonstrate some variability in measured noise for the same aircraft and test configuration which is expected due to differing meteorological conditions. The results show the predictions are generally higher than or within an acceptable tolerance of the measured levels and therefore the ETMS remains an appropriate tool for engine testing noise compliance analysis at Christchurch Airport.

4.3 Engine Testing Management Software 2025 Summary

The ETMS is used to calculate noise levels emitted from on-aircraft engine testing including the 7-day rolling average noise level. CIAL has used the ETMS since 2010 and in July 2017 the software was updated to meet new provisions in the District Plan including:

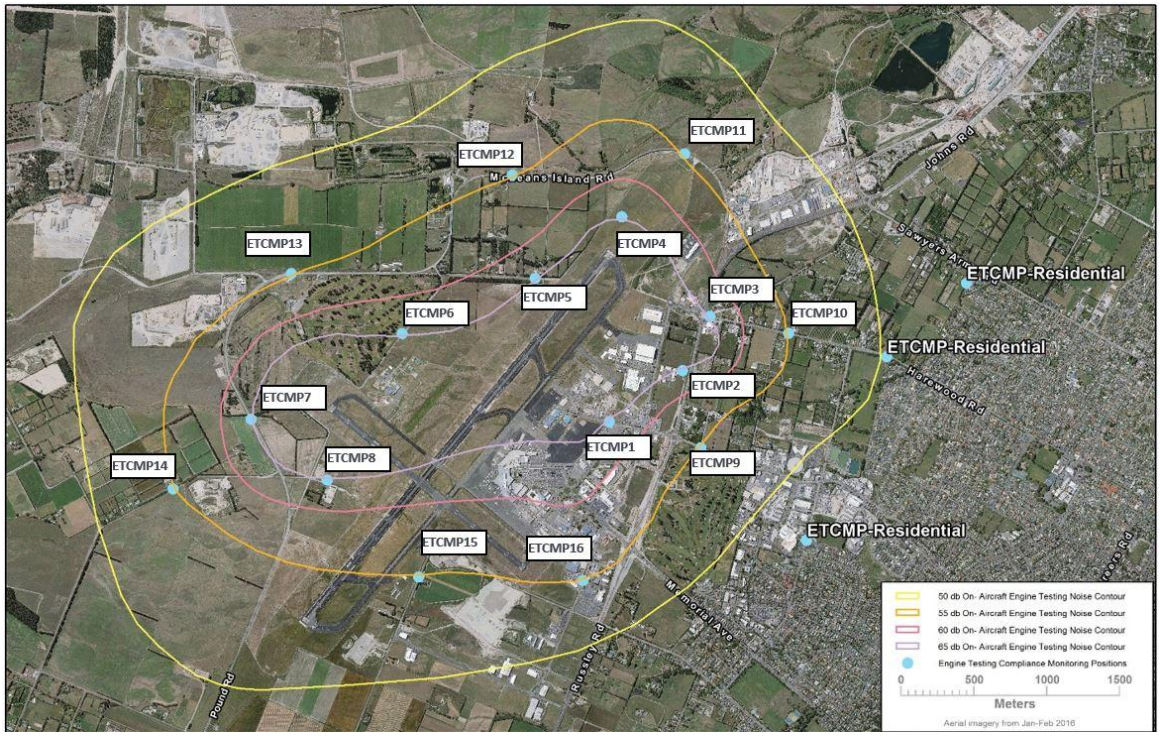
- The requirement to calculate the 7-day rolling average;
- Development of the ETMS on a web-based platform; and
- An initial 6-month long verification of the ETMS calculated noise levels at the Engine Testing Compliance Monitoring Positions (ETCMP), using in-situ noise measurements and thereafter biannual verification measurement.

In 2023 an independent audit of the ETMS was conducted which found that the system is working well. Some minor recommendations were made regarding improvements to the ETMS user interface to minimise the potential for data errors and make the system more user-friendly. Changes to the user interface are not proposed at this stage.

4.3.1 Calculated Engine Testing Noise Levels

Calculated noise levels for 2025 generated from the ETMS at the ETCMPs are detailed in Table 13 (65 dB L_{dn} limit) and Table 14 (55 dB L_{dn} limit) below. The location of the ETCMPs is shown in Figure 3 below.

Figure 3: Insert from Christchurch District Plan On-Aircraft Engine Testing Compliance Monitoring Points



The maximum 7-day L_{dn} column in Table 13 and Table 14 below show that the calculated noise levels generated using the ETMS are compliant with noise limits detailed in rule 6.1.6.2.6.a.i.

Table 13: ETMS calculation results: 65 dB L_{dn} limit – highest 7 day L_{dn} rolling average

ETCMP Location	Minimum 7-day L_{dn}	Maximum 7-day L_{dn}	Median 7-day L_{dn}	Average 7-day L_{dn}
1	39	62	51	51
2	30	55	44	44
3	36	60	49	49
4	35	60	49	50
5	36	61	51	50
6	28	57	41	41
7	20	57	33	34
8	24	64	36	37

Table 14: ETMS calculation results: 55 dB L_{dn} limit – highest 7 day rolling average

ETCMP Location	Minimum 7-day L_{dn}	Maximum 7-day L_{dn}	Median 7-day L_{dn}	Average 7-day L_{dn}
9	32	54	45	45
10	28	53	42	41
11	27	51	41	41
12	28	52	42	42
13	20	50	34	35
14	18	48	29	29

ETCMP Location	Minimum 7-day L_{dn}	Maximum 7-day L_{dn}	Median 7-day L_{dn}	Average 7-day L_{dn}
15	20	54	36	36
16	24	53	40	40

Maximum noise levels at ETCMP 17-19 were all below the noise limit of 75 dB L_{AFmax} contained in rule 6.1.6.2.5.a.i. The maximum noise level for each of these was 63, 66 and 63 dB L_{AFmax}, respectively.

Figure 4 and Figure 5 below display the 7-day rolling average calculated noise levels at each of the ETCMPs for 2025. As shown in the two graphs, compliance was assessed to be achieved at all ETCMPs for the logged engine testing events in that period.

Figure 4: ETMS predicted noise levels for ETCMP 1 to 8 located on the 65 dB L_{dn} engine testing contour

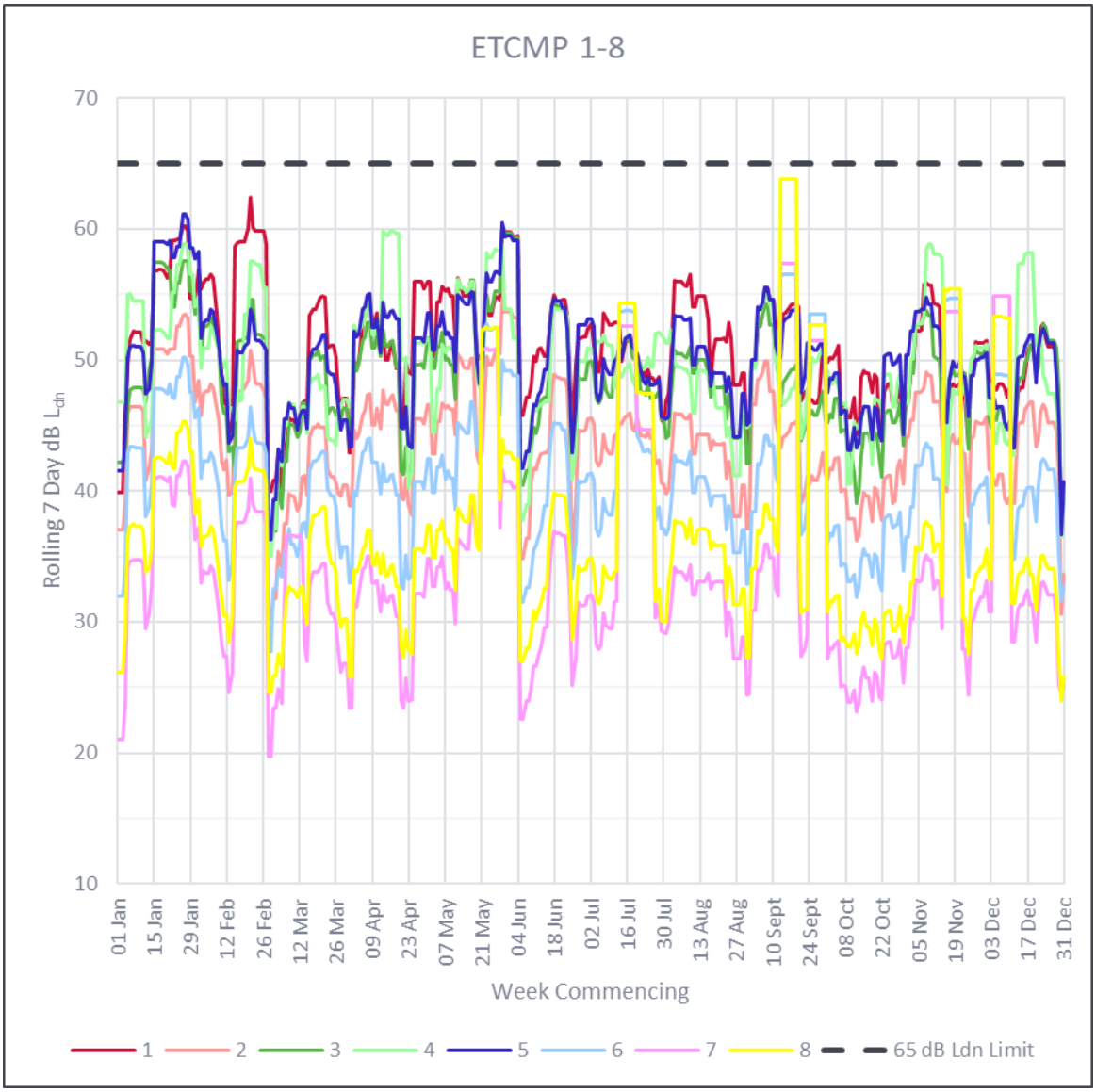
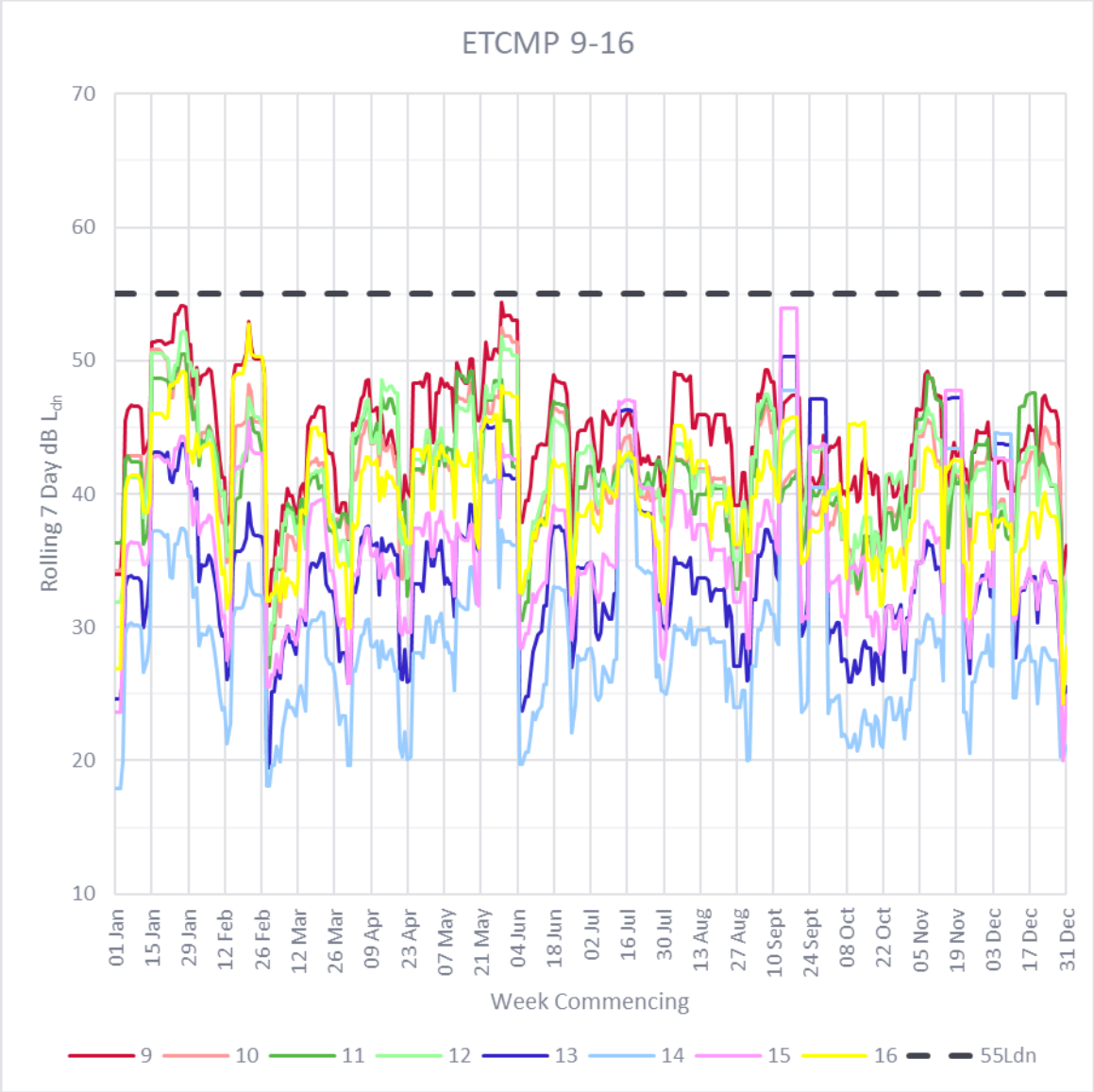


Figure 5: ETMS predicted noise levels for ETCMP 9 to 16 located on the 55 dB L_{dn} engine testing contour



The figures identify a variation in calculated noise levels across the ETCMPs with some distinct peaks. These peaks are a result of noise emissions from a given test; notably, high power runs near the ETCMP.

4.3.2 Independent Audit of ETMS

The Airport Noise Management Plan requires an independent review of the ETMS is carried out every five years. This was last done in 2023 and is due again in 2028.

5.0 COMPLAINTS

5.1 Complaints Summary

In accordance with Rule 6.1.6.2.5a.iv.D and Rule 6.1.6.2.6a.vii.C of the CDP, the noise complaints summary below details complaints received in 2025 in respect to aircraft operations and on-aircraft engine testing, and any actions taken in response to these complaints.

All names and specific addresses have been omitted for privacy purposes. Complaints have been grouped by the type of operation and aircraft. The actions taken for each complaint are included in the table.

In summary, 44 complaints were received from 13 individuals during the period 1 January to 31 December 2025.

One unresolved noise complaint, first raised in 2021, continued into 2025. This complaint relates to aircraft departing the southern runway in accordance with the Divergent Go-Around and Missed Approach Protection (DMAP) flight paths and remained open at the end of the 2025 reporting year.

The total number of noise complaints received in 2025 increased by 25 (132%) compared with 2024. However, the number of individual complainants decreased by 3 (19%) over the same period. It is noted that two complainants each lodged multiple complaints in 2025, submitting 21 and 11 complaints respectively. Together, these accounted for 73% of all complaints received in 2025.

Two complaints were received in relation to Police Eagle Helicopter movements near the complainants' homes. The Police Eagle Helicopter was temporarily stationed in Christchurch in December 2025. Correspondence with the complainants is included below; however, these have not been included in the overall complaints total, as Police Eagle movements are not controlled by Christchurch Airport other than during take-off and landing from the helicopter's temporary base at the airport.

Christchurch Airport continues to address community concerns through the prompt response to noise complaints, investigation and analysis to identify causes, liaison with relevant agencies, and complaint management all in accordance with the Complaints process detailed in the Christchurch Airport Noise Management Plan and with guidance from the Airport Noise Liaison Committee.

Noise Concern	Type of aircraft	No of complaints	No of complainants	Actions Taken
Low Flying Aircraft	Jet	35	4	One individual lodged 21 complaints between January and August regarding low-flying jet aircraft noise near their West Melton residence. The complainant reported experiencing an increase in overhead movements since early to mid-2024. Their concerns relate to both arriving and departing aircraft, with particular sensitivity to night-time and early-morning operations. All complaints requested no contact, and no contact details were provided other than a residential address. A letter was sent to the address to acknowledge their feedback and invite further engagement should the individual wish to discuss their concerns. No response was received, and complaints continued to be lodged.
				One individual lodged two complaints between January and March, one regarding an A380 aircraft and another to a C17 aircraft and later expressed general concern regarding aircraft movements near their Yaldhurst residence. The airport provided flight details on both occasions and, following the second complaint, explained the nature of United States Antarctic Programme (USAP) operations, which generally occur during daytime hours, along with information on Divergent Go-Around and Missed Approach Protection (DMAP) flight paths. No further correspondence was received.
				One individual lodged 11 complaints between July and December regarding low-flying jet aircraft noise near their West Melton residence. The complainant reported an increase in aircraft movements compared with previous years, particularly between 6–7am and 10–11pm. Following the initial complaint, the airport provided flight details, explained aircraft operations, post-COVID-19 growth, DMAP procedures, and compliance with the 65 dB Ldn aircraft noise compliance contour. A location-specific review of pre- and post-DMAP flight paths was also provided by Airways, demonstrating reduced aircraft overflight time in the area following DMAP implementation due to most aircraft turning prior to the individual's location. No further response was received, and subsequent complaints were lodged with a request not to be contacted.
				One individual lodged a complaint in October regarding aircraft using the cross runway during a particular night, observed near their Richmond residence. The airport explained that cross runway operations were required due to north-westerly wind conditions and that some aircraft turned near the individual's home to align with Runway 29. Information was provided on the relationship between runway use and wind conditions, the RNP approach path near the area, variability in flight paths, and the frequency of cross runway operations. No further correspondence was received.

Noise Concern	Type of aircraft	No of complaints	No of complainants	Actions Taken
Low Flying Aircraft (cont.)	Jet & Light Aircraft	1	1	One individual lodged a complaint raising concerns about low-flying jet aircraft in the evening near their Hei Hei residence, noting disturbance to their child's sleep. The airport explained that the flights were associated with flight training activity and a scheduled Air New Zealand service and provided context on operations in the area. No further correspondence was received.
	Light Aircraft	1	1	One individual lodged a complaint via the airport IOC team in February regarding an Airways Corporation calibration flight, describing the noise as high-pitched, constant, and intrusive. The IOC team explained that calibration flights occur once or twice per year to ensure the accuracy and reliability of navigational aids and radar systems. The complainant did not wish to discuss the matter further but requested that the complaint be recorded.
	Helicopter	1	1	One individual lodged a complaint regarding a low-flying helicopter. They requested no contact and provided no contact details. The airport investigated and confirmed the aircraft was a helicopter operated by Christchurch Helicopters. The pilot attempted to avoid the densest part of the urban area; however, some homes were overflown at approximately 800 feet. Christchurch Helicopters discussed the event with the pilot, shared the learnings internally, and ensured the pilot undertook additional noise-abatement training. Christchurch Airport submitted the matter to the Civil Aviation Authority (CAA) as a Part 12 occurrence. The investigation and any resulting actions were managed by the CAA.
Flight Path Change	Multiple	2	2	One individual raised concerns about increased aircraft noise over their Yaldhurst residence, noting a change in flight paths affecting both themselves and their spouse. The individual later followed up by email with examples of flights and questions regarding airport noise contours. The airport responded by explaining Divergent Go-Around and Missed Approach Protection (DMAP) procedures, outlining both operative and updated noise contours and the potential processes of integration into planning documents, investigating the flights identified, and confirming compliance with applicable noise limits. No further correspondence was received.

Noise Concern	Type of aircraft	No of complaints	No of complainants	Actions Taken
Flight Path Change (cont.)	Multiple (cont.)			One individual raised concerns regarding flight path changes associated with DMAP procedures from Runway 20. The complainant expressed concern about aircraft noise, enquired about potential compensation through property purchase or acoustic treatment, and suggested that flight path changes may reflect commercial interests. They also noted that neighbours in the area had raised similar concerns. The airport explained eligibility for the Acoustic Treatment Programme under the Christchurch District Plan and advised that DMAP procedures were implemented for safety, capacity, and operational efficiency, and are consistent with other New Zealand airports. The complainant was encouraged to advise neighbours that they could raise concerns directly with the airport or confirm whether they were comfortable sharing contact details to enable follow-up. The airport and Airways offered to meet to discuss the concerns further, and meeting times were proposed. No meeting had occurred at the time of reporting, with the complainant advising they would make contact after returning from holiday.
Engine Noise	Jet	3	3	The airport received three complaints from three individuals in relation to the same event involving RNZAF Super Hercules C-130 aircraft operations at night. The airport investigated the event and responded to each complaint individually, explaining that the noise was associated with a planned Antarctic flight to McMurdo Station. The aircraft commenced engine start and taxi at approximately 9:40pm; however, a subsequent deterioration in Antarctic weather conditions required the crew to await an updated forecast, which later indicated conditions below safe operating limits, resulting in the flight being cancelled. The aircraft remained on the taxiway with engines running to safely burn off fuel prior to overnight parking, as the aircraft cannot be defuelled due to fuel additives and excess fuel may vent or spill if levels remain too high. Once fuel levels were reduced, the aircraft returned to the Antarctic apron at approximately 11:20pm. This was an unusual circumstance, as Antarctic flights typically depart during daylight hours. Two complainants expressed appreciation for the explanations provided, while no response was received from the third complainant.
Unknown	Unknown	1	1	One individual lodged a complaint regarding what sounded like a light aircraft circling at approximately 3:00am. The airport investigated and confirmed there were no aircraft movements between 12:17am and 5:53am, no engine tests, and no other known operations or known potential causes during that period. The airport also explained the curfew for night-time flight training, which applies from 10:00pm in winter and 11:00pm in summer. The complainant expressed appreciation for the investigation.

Police Helicopter Complaints

No of complaints	No of complainants	Actions Taken
2	2	One individual lodged a complaint via a call to the airport IOC team regarding police helicopter activity over their residence at night. The airport attempted to return the call the following day but was unable to make contact despite multiple attempts. A message was left; however, no response was received.
		One individual lodged a complaint regarding police helicopter movements at night and requested no contact. As the individual had previously provided contact details, the airport shared relevant Police contact information should they wish to make further enquiries. No response was received.

6.0 SCHEDULE OF ACOUSTIC TREATMENT

In accordance with Rule 6.1.6.2.7.2 of the Christchurch District Plan, CIAL has developed an Acoustic Treatment Programme (ATP) whereby dwellings existing as of 6 March 2017 within 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,

- Dwellings located within the 65 dB L_{dn} Annual Aircraft Noise Contour;
- Dwellings located within the 65 dB L_{dn} Engine Testing Contour; and
- Dwellings located within the 60 to 65 dB L_{dn} Engine Testing Contour (mechanical ventilation only).

Unlike the Annual Aircraft Noise Contour, the Engine Testing Contour has been fixed by the District Plan. Therefore, there is no change to the number of eligible dwellings inside these noise contours. For engine testing there are ten dwellings eligible for the installation of mechanical ventilation.

For operational noise, a schedule of eligible dwellings is maintained and updated annually when the AANC is prepared. The schedule contains a complete list of 'Existing Dwellings' located within the Future Aircraft Operations Contour (65 dB L_{dn}) and each year the AANC is mapped to identify which of these Existing Dwellings fall within the 65 dB L_{dn} AANC and hence become eligible for treatment.

The 2025 AANC incorporates no additional dwellings compared with the previous AANC. Therefore, no additional mitigation offers are required this year.

7.0 CONCLUSION

Marshall Day Acoustics has prepared a compliance report for noise from aircraft operations and on-aircraft engine testing at the Christchurch International Airport. The report has been prepared in accordance with Rules 6.1.2.1.5 and 6.1.2.1.6. The main conclusions are:

- The 2025 AANC demonstrates compliance with the 65 dB L_{dn} Air Noise Compliance Contour contained in the CDP.
- The 2025 AANC is at least three decibels below the 65 dB L_{dn} limit at the Air Noise Compliance Contour.
- Noise from aircraft operations was measured continuously by CIAL's new permanent noise monitoring system. This data was used to verify the 2025 AANC predictions which showed acceptable correlation between the modelled and measured noise levels.
- Predictions of engine testing noise levels using the ETMS software shows compliance with noise limits detailed in the CDP.
- Verification measurements of engine testing noise were performed in 2025 to verify that the calculations taken from the ETMS software are appropriate for assessing compliance.
- With the exception of the south-eastern end of Runway 11/29, the 2025 AANC is larger in extent than previous AANC. However, no additional dwellings are eligible for acoustic treatment.

APPENDIX A REGULATORY REQUIREMENTS

6.1.2.1.5 Policy – Airport Noise

a. Require the management of aircraft operations and engine testing at Christchurch International Airport, so that:

i. noise generated is limited to levels that minimise sleep disturbance and adverse effects on the amenity values of residential and other sensitive environments so far as is practicable;

ii. where practicable, adverse noise effects are reduced over time.

b. Mitigate adverse noise effects from the operations of the Christchurch International Airport on sensitive activities, by:

i. prohibiting new sensitive activities within the Air Noise Boundary and within the 65 dB Ldn engine testing contour; and

ii. requiring noise mitigation for new sensitive activities within the 55 dB Ldn air noise contour and within the 55 dB Ldn engine testing contour; and

iii. requiring Christchurch International Airport Limited (CIAL) to offer appropriate acoustic treatment in respect of residential units existing as at 6 March 2017 within the 65 dB Ldn Annual Airport Noise Contour, and within the 60 dB Ldn engine testing contour.

Note: Policy 17.2.2.10 also mitigates noise effects from the operations of Christchurch International Airport on rural land.

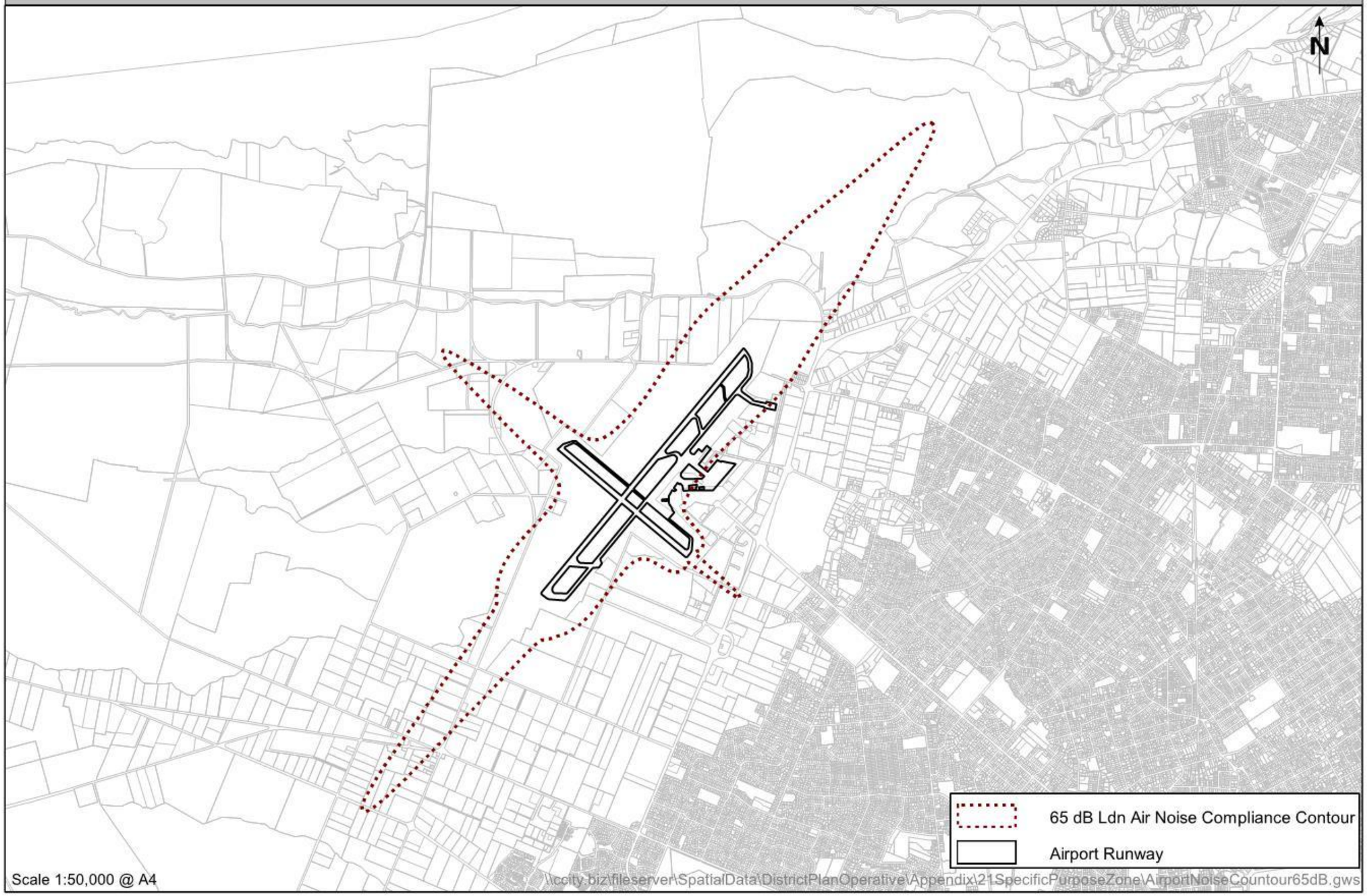
The relevant rules relating to aircraft operation and engine testing noise are given in 6.1.6.2.5 – 6.1.6.2.7.1 and Appendix 6.11.14. They state:

6.1.6.2.5 Aircraft operations at Christchurch International Airport

a. Aircraft operations at Christchurch International Airport shall meet the following activity standards:

i. Noise from aircraft operations shall not exceed 65 dB Ldn outside the 65 dB Ldn Air Noise Compliance Contour shown in Figure 1, other than as provided for in Rule 6.1.6.2.5 a.ii.

Figure 1: Map of 65 dB Ldn Air Noise Compliance Contour



ii. *Noise from aircraft operations may exceed the aircraft noise limit in Rule 6.1.6.2.5 a.i by not more than 2 dB, provided that such exceedance is due to atypical weather, national flight disruption, natural disaster or other unplanned circumstances.*

iii. *Monitoring and determining compliance with activity standards i. and ii. above shall be as follows:*

- A. *Noise monitoring of aircraft operation shall be based on calculations from an operational aircraft noise model, and records of actual aircraft operations at Christchurch International Airport over the previous year's aircraft operations.*
- B. *Noise from aircraft operations shall be calculated as the Annual Aircraft Noise Contour (AANC), over the busiest three month period of the previous year.*
- C. *The calculations shall be performed by a person with appropriate qualifications and experience in airport noise modelling and acoustics assessments.*
- D. *The calculated results shall be verified by noise measurements carried out in accordance with the Airport Noise Management Plan required under Rule 6.1.6.2.7.1.*
- E. *The measurement of aircraft sound exposure levels and the derivation of the 65 dB Ldn contour shall be in accordance with NZS 6805:1992.*

iv. *An Aircraft Operations Noise Monitoring Report shall be provided annually by the airport operator to the Council, with the first required by the 6 March 2018. The report shall include:*

- A. *the calculated AANC;*
- B. *the results of the verification measurements;*
- C. *analysis of compliance with reference to Rule 6.1.6.2.5 a.i. and ii. (including the number of exceedances and the reasons for them); and*
- D. *a summary of complaints received over the previous year in relation to noise from aircraft operations, and any actions taken in response.*

v. *The additional activity standards in Rule 6.1.6.2.7 for aircraft operations at Christchurch International Airport shall be met.*

Definition: Aircraft operations

means:

a. *the landing and take-off of aircraft; and*

b. *aircraft flying along any flight path associated with a landing or take-off.*

For the purposes of Rule 6.1.6 Activity specific noise rules, it excludes:

c. *aircraft operating in an emergency for medical or national/civil defence reasons;*

d. *air shows;*

e. *military operations;*

f. *Antarctic operations;*

g. *helicopter operations;*

h. *aircraft using the airport as an alternative to a scheduled airport elsewhere;*

i. *aircraft taxiing; and*

j. *aircraft engine testing.*

6.1.6.2.6 On-aircraft engine testing at Christchurch International Airport

a. The testing of engines on aircraft at Christchurch International Airport shall meet the following activity standards:

i. Noise from testing of engines on aircraft shall not exceed the noise limits shown in Table 5 below at the engine testing compliance monitoring positions (ETCMPs) shown in Figure 2.

Table 5: On-aircraft engine testing noise limits

Noise Limit	***Engine testing compliance monitoring positions (ETCMP) (refer Figure 2)***
65 dB Ldn, 7 day	*8 points*
55 dB Ldn, 7 day	*8 points*
75 dB L_{Amax} 22:00 to 07:00 only	*Edge of residential zone – 3 points*

ii. All high power testing of jet engines on an aircraft shall occur between the hours of 07:00h and 22:00h, except that a maximum of 5 unplanned engine testing events within any three month period, up to a maximum of 12 unplanned engine testing events per annum, may occur between the hours of 22:00h and 07:00h.

iii. Testing of turbo prop engines on an aircraft between the hours of 22:00h and 07:00h, when the total duration of testing at high power is five minutes or more per aircraft, shall be conducted in the vicinity of the threshold of Runway 11 (i.e. the north-western end of the cross-runway).

iv. The following exclusions apply:

A. The testing of engines on an aircraft used for Antarctic operations, is excluded from activity standards i.-iii..

B. The testing of engines on any aircraft is excluded from activity standards i.-iii., where such work is necessary to satisfy an airworthiness direction or other like safety requirement issued by the Minister of Transport, the Director of Civil Aviation or the Civil Aviation Authority, as is any other unplanned engine testing arising from an aircraft operator's identification of a safety issue relating to an aircraft fleet, or required as a result of a natural disaster including volcanic eruption.

C. The testing of turbo prop engines on an aircraft is exempted from activity standard iii. When Runway 11/29 is in use.

v. Monitoring and determining compliance with activity standard a.i. above shall be as follows:

D. Compliance or otherwise with activity standard a.i. shall be demonstrated by calculations of on-aircraft engine testing noise emissions based on the actual on-aircraft engine testing events and calculations of noise emissions for the engine testing events and configurations in question. The noise level (Ldn, 7 days) shall be calculated as a 7 day rolling average.

E. The calculations in activity standard a.v.A. shall be verified by measurements undertaken with reference to at least four ETCMPs for a sample of at least two different on-aircraft engine test configurations. Verification measurements shall be carried out for an initial period of 6 months from 6 March 2017 and subsequently be undertaken at least once every two years.

vi. An On-aircraft Engine Testing Report shall be provided quarterly by the airport operator to the Council, with the first covering the period ending the 30 June 2017 and provided to the Council by the 15 July 2017. The report shall include:

F. *a summary of all on-aircraft engine testing activities undertaken in the quarter; and*

G. *identification of all tests undertaken both in accordance with activity standard a.i. and those excluded by activity standard a.iv., including reasons for the tests excluded an any measures taken to manage noise effects during those excluded tests.*

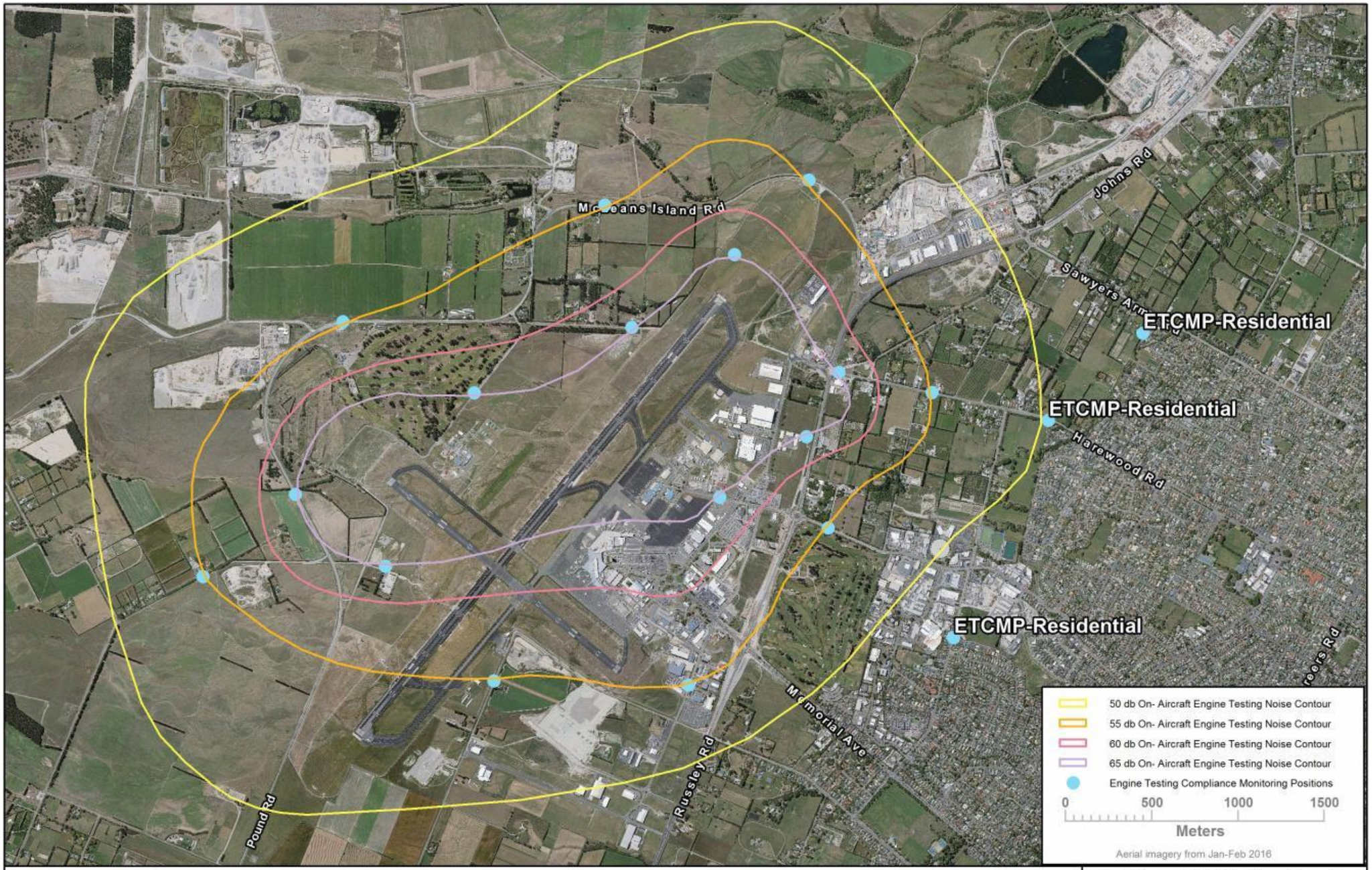
vii. *An On-aircraft Engine Testing Noise Monitoring Report shall be provided annually by the airport operator to the Council by 6 March 2018, and annually thereafter. The report shall include:*

H. *the results of verification measurements in accordance with activity standard v.B.; and*

I. *analysis of compliance with reference to Rule 6.1.6.2.6 a.i.; and*

J. *a summary of complaints received over the previous year in relation to noise from on-aircraft engine testing, an any actions taken in response.*

viii. *The additional activity standards in Rule 6.1.6.2.7 for on-aircraft engine testing at Christchurch International Airport shall be met.*



6.1.6.2.7 Additional activity standards for aircraft operations and on-aircraft engine testing at Christchurch International Airport

a. The following additional activity standards apply to aircraft operations and to the testing of engines on aircraft at Christchurch International Airport.

6.1.6.2.7.1 Airport Noise Management Plan

a. Within 12 months of 6 March 2017, noise from aircraft operations and on-aircraft engine testing at Christchurch International Airport shall be managed in accordance with an Airport Noise Management Plan prepared by a suitably qualified and experienced person on behalf of the airport operator and in consultation with the Airport Noise Liaison Committee, in accordance with the requirements set out in Appendix 6.11.14. The Airport Noise Management Plan shall be reviewed, and updated if required, at least once every two years.

b. The Airport Noise Management Plan shall:

i. demonstrate how compliance with the following noise limits will be achieved:

A. for aircraft operations – Rule 6.1.6.2.5; and

B. for on-aircraft engine testing – Rule 6.1.6.2.6.

ii. provide the details of the noise monitoring programme;

iii. incorporate a procedure for transparently and expediently responding to any compliance received in relation to noise from aircraft operations and on-aircraft engine testing; and

iv. incorporate a procedure for transparently and expediently presenting, in a publicly accessible forum, the following:

A. the Aircraft Operations Noise Monitoring Report, On-aircraft Engine Testing Report, and On-aircraft Engine Testing Noise Monitoring Report required by Rules 6.1.6.2.5 and 6.1.6.2.6;

B. a 7-day rolling report of noise from on-aircraft engine testing against the requirements of Rule 6.1.6.2.6 a.; and

C. a daily LAmax report of noise from on-aircraft engine testing against the requirements of Rule 6.1.6.2.6 a. at the edge of the residential zone.

Appendix 6.11.14 Airport Noise Management Plan

a. The Airport Noise Management Plan required by Rule 6.1.6.2.7.1 shall:

i. document noise management actions including ongoing investigations, methods, processes and resources to provide for:

A. the management of aircraft operations and on-aircraft engine testing to ensure comp liance with Rules 6.1.6.2.5 a.i. and ii. and 6.1.6.2.6 a.i.-iv.; and

B. consideration of alternative methods of noise management and mitigation to achieve the reduction of noise effects from all aspects of aircraft operations including on-aircraft engine testing; and

C. engine maintenance ground run procedures to be implemented in conjunctionwith all aircraft operators or their agents, including:

i. compliance with Rule 6.1.6.2.6 a.i.-iv., including documentation required by Rule 6.1.6.2.6 a.v.-vii.; and

ii. procedures which will encourage Antarctic and NZDF engine testing on the win g to occur between the hours of 07:00 to 19:00.

ii. provide the details of a noise monitoring programme to maintain compliance with Rules 6.1.6.2. 5 a.iii.-iv. and 6.1.6.2.6 a.v.-vii. and, in particular, the following:

A. the monitoring, recording, verification and calculation of aircraft operation and On-aircraft Engine Testing noise levels;

B. the preparation of the annual Aircraft Operations and On-aircraft Engine Testing Nois e Monitoring Reports and quarterly On-aircraft Engine Testing Report;

C. the preparation of the AANC maps, showing actual noise contours in 1 dB increments from 55 dB to 70 dB Ldn; and

D. the review of the software used for predicting aircraft operation noise and the software used for predicting engine testing noise, at least once every five years to determine whether the models and/or software require updating.

iii. establish dispute resolution procedures.

iv. establish a procedure for transparently and expediently responding to any complaints received in relation to noise from aircraft operations and on-aircraft engine testing.

v. require the maintenance of a website that provides for the transparent and accessible display of

A. the current version of the Airport Noise Management Plan as required by Rule 6.1.6.2. 7.1;

B. the Aircraft Operations Noise Monitoring Report, On-Aircraft Engine Testing Report, a nd On--Aircraft Engine Testing Noise Monitoring Report for the previous year, required by Rules 6.1.6.2.5 and 6.1.6.2.6, including a summary of noise monitoring conducted, and the AANC;

C. A 7-d-ay rolling report of noise from On-Aircraft aircraft engine testing over the previous seven days updated daily and identifying all tests undertaken both within the Ldn limits and those exempted, including reasons for the tests exempted;

D. a summary of complaints received annually and a description of actions taken to addr ess complaints.

vi. document schedules of:

A. acoustic treatment implemented over the past calendar year as required by Rule 6.1.6.2.7.2; and

B. *acoustic treatment offered, where the conditions of the offer required by section b. of Appendix 6.11.15 have not yet been met.* ETCMPs positions

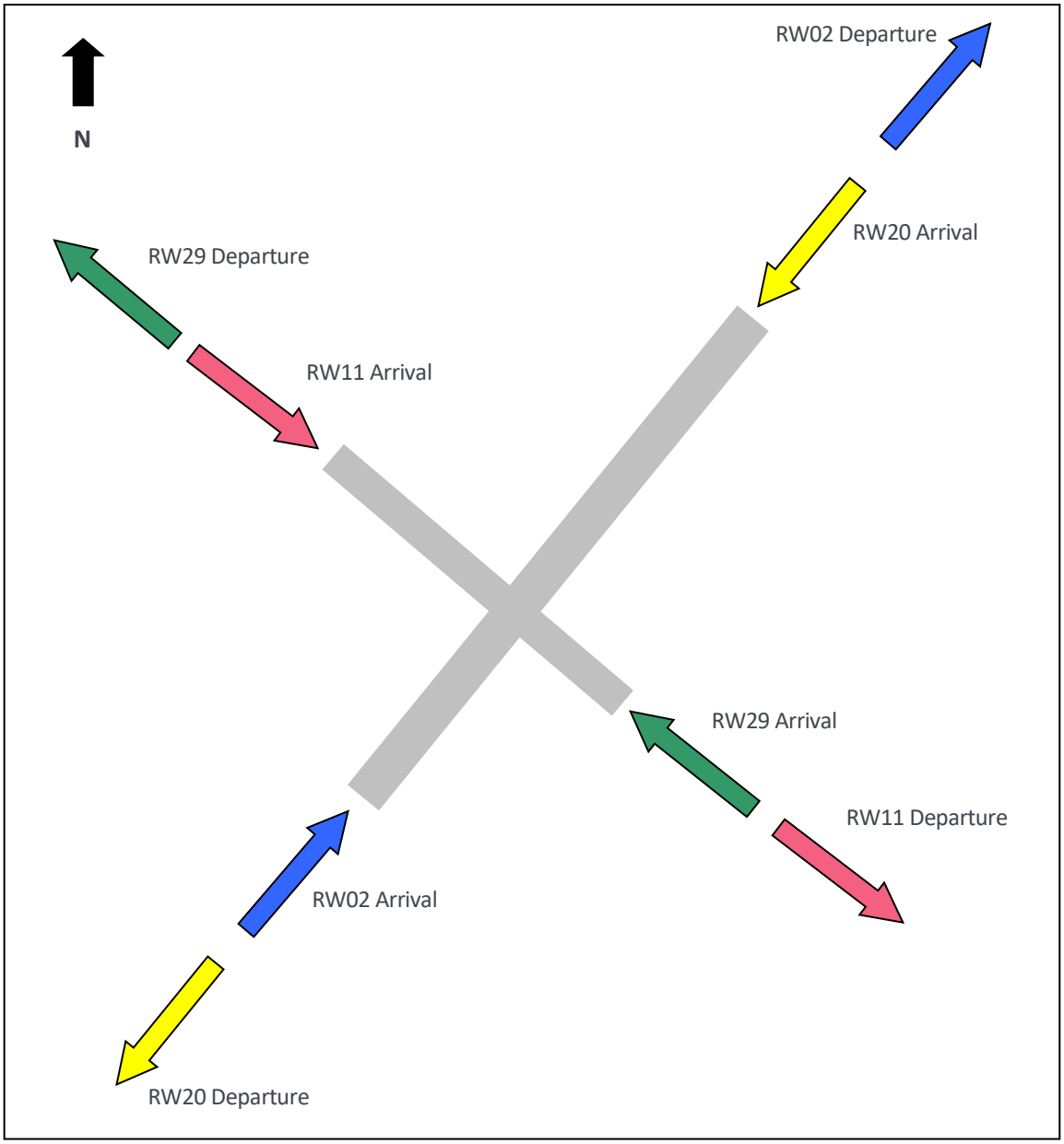
APPENDIX B CHRISTCHURCH AIRPORT RUNWAY VECTORS

Runway 02 refers to operations using the main runway with a heading of 20 degrees from true north i.e. arrivals from the south west landing in a north easterly direction and departures towards the north east.

Runway 20 refers to operations using the main runway with a heading of 200 degrees from true north i.e. arrivals from the north-east landing in a south westerly direction and departures towards the south west.

Runway 11 refers to operations using the crosswind runway with a heading of 110 degrees from true north i.e. arrivals from the north-west landing in a south easterly direction and departures towards the south east.

Runway 29 refers to operations using the crosswind runway with a heading of 290 degrees from true north i.e. arrivals from the south-east landing in a north westerly direction and departures towards the north west.

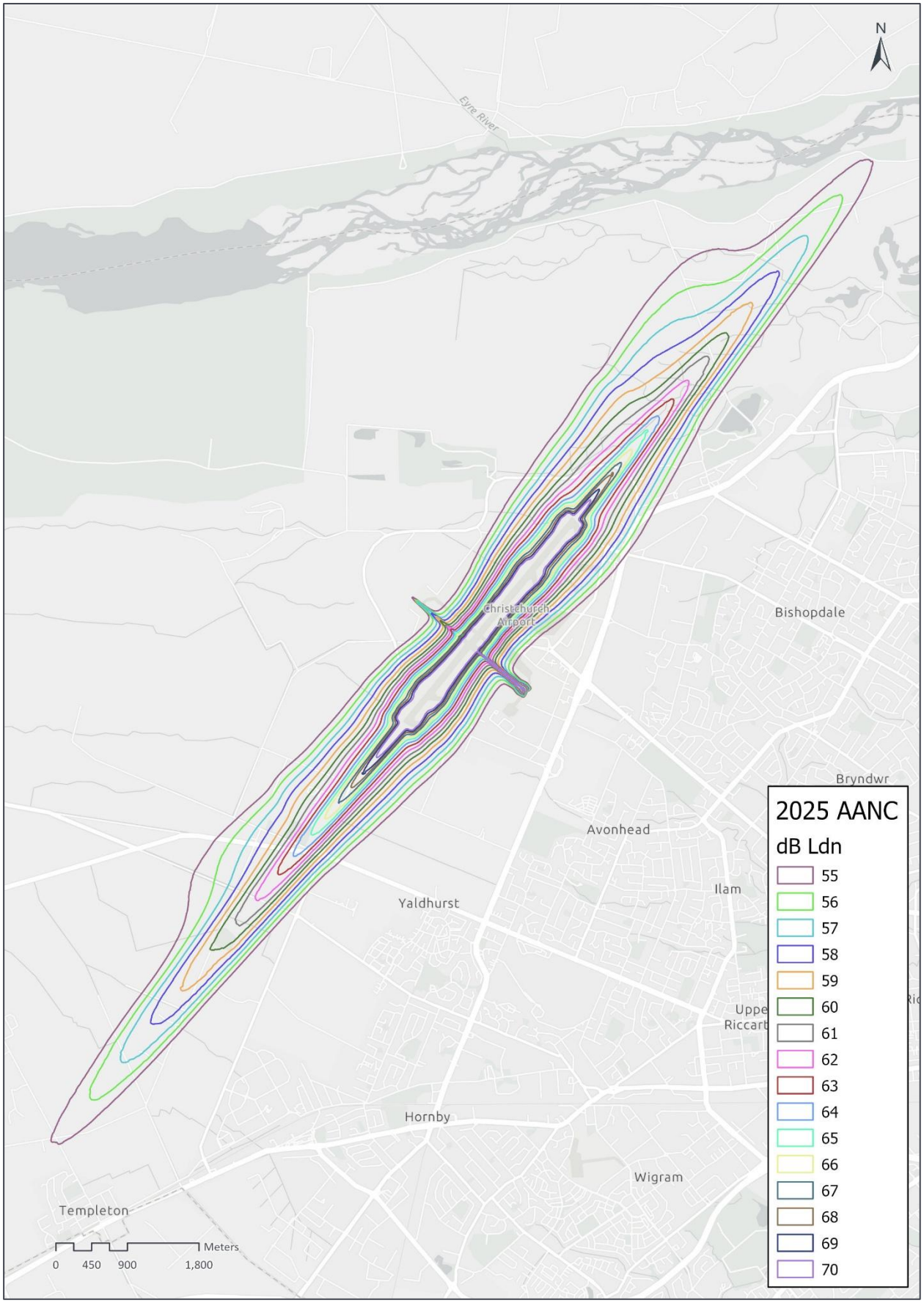


APPENDIX C MODELLED AIRCRAFT MOVEMENTS

Table C1: 2025 AANC Modelled Aircraft Movements (average daily movements from busy 3 months)

Aircraft type	Aircraft	RW02		RW11	RW20		RW29	
		Day	Night	Day	Day	Night	Day	Night
Scheduled passenger jet	A20N	0.87	2.13	0.00	0.54	1.32	0.02	0.00
	A21N	0.51	1.16	0.00	0.24	0.88	0.00	0.00
	A320	31.90	3.43	0.00	19.74	2.41	0.37	0.00
	A332	0.02	0.00	0.00	0.02	0.00	0.00	0.00
	A333	0.00	0.00	0.00	0.02	0.00	0.00	0.00
	A359	1.44	0.28	0.00	0.84	0.17	0.00	0.00
	A35K	0.50	0.00	0.00	0.26	0.00	0.00	0.00
	A388	1.26	0.00	0.00	0.74	0.00	0.00	0.00
	B38M	0.44	0.00	0.00	0.20	0.00	0.00	0.00
	B738	3.49	2.76	0.00	2.17	1.86	0.04	0.00
	B788	0.43	0.00	0.00	0.30	0.02	0.00	0.00
	B789	0.32	0.29	0.00	0.26	0.20	0.00	0.00
	B78X	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Scheduled turboprop	AT76	47.46	1.53	0.01	29.67	1.03	0.78	0.00
	DH8C	11.90	0.30	0.01	7.94	0.27	0.13	0.00
	JS32	0.01	0.00	0.00	0.01	0.00	0.00	0.00
	PC12	7.88	0.02	0.00	4.89	0.03	0.11	0.00
	SF34	0.09	0.00	0.00	0.00	0.00	0.00	0.00
Non-Scheduled jet	A319	0.01	0.00	0.00	0.00	0.00	0.00	0.00
	A321	0.14	0.39	0.00	0.08	0.52	0.00	0.00
	A332	0.01	0.01	0.00	0.01	0.01	0.00	0.00
	B734	2.32	1.87	0.00	1.08	1.23	0.01	0.00
	B738	0.48	1.24	0.00	0.17	0.71	0.00	0.02
	B763	0.61	0.00	0.00	0.41	0.00	0.00	0.00
	BE40	0.03	0.02	0.00	0.01	0.01	0.00	0.00
	C510	0.06	0.00	0.00	0.04	0.00	0.00	0.00
	C560	0.01	0.01	0.00	0.00	0.00	0.00	0.00
	C680	0.03	0.00	0.00	0.02	0.00	0.00	0.00
	CL60	0.34	0.01	0.00	0.13	0.00	0.00	0.00
	E550	0.02	0.00	0.00	0.00	0.00	0.00	0.00
	E55P	0.03	0.00	0.00	0.01	0.00	0.00	0.00
	FA7X	0.03	0.00	0.00	0.00	0.00	0.00	0.00
	FA8X	0.03	0.00	0.00	0.01	0.00	0.00	0.00
	GL7T	0.03	0.00	0.00	0.01	0.00	0.00	0.00
	GLF6	0.01	0.00	0.00	0.00	0.00	0.00	0.00
	H25B	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Non-Scheduled turboprop	AT75	0.14	0.00	0.00	0.14	0.00	0.01	0.00
	B350	0.14	0.01	0.00	0.06	0.00	0.00	0.00
	BE30	0.10	0.03	0.00	0.04	0.06	0.00	0.00
	BE9L	0.11	0.00	0.00	0.07	0.01	0.00	0.00
	PAY4	0.02	0.04	0.00	0.09	0.00	0.00	0.00
	SF34	0.04	0.00	0.00	0.04	0.00	0.00	0.00

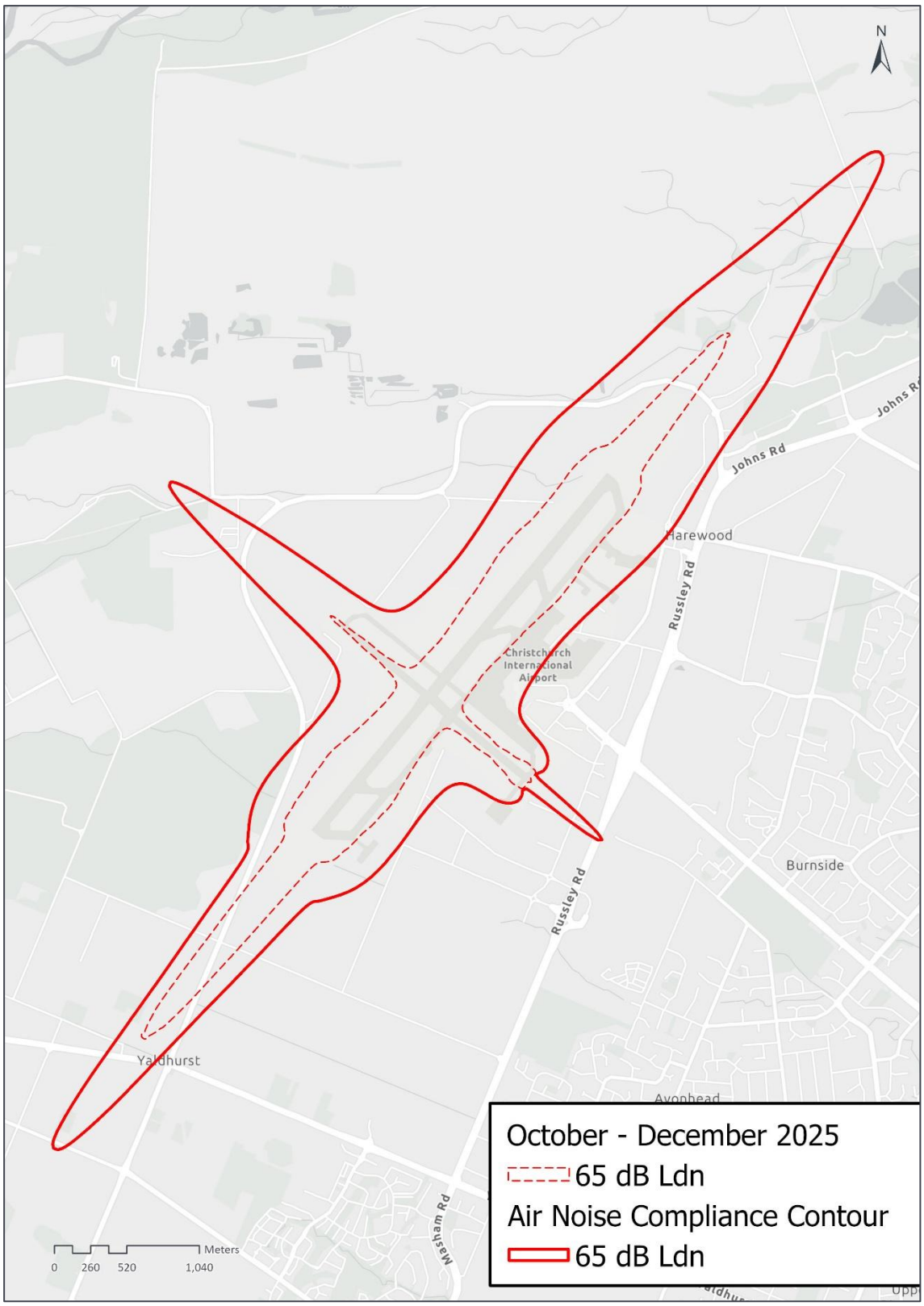
APPENDIX D 2025 AANC (55 – 70 DB L_{DN} IN ONE DECIBEL INCREMENTS)



APPENDIX E CALCULATED NOISE CONTOURS FOR OCTOBER – DECEMBER 2025

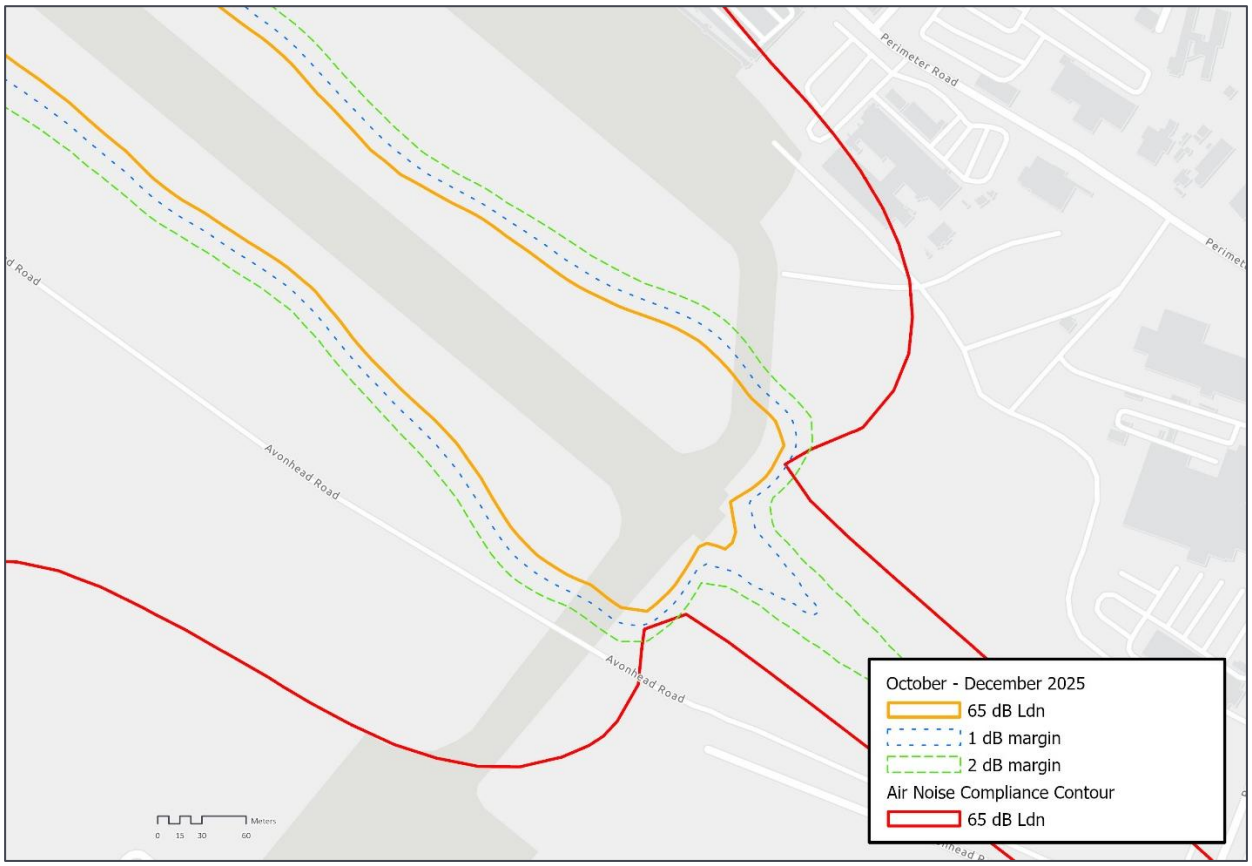
Section 3.2 sets out that the busiest three months in 2025 were January – March which did not coincide with the busy period for crosswind runway use which were October – December. Therefore, CIAL requested that the noise contours for aircraft operations during the October - December be calculated for information purposes. These contours are shown in Figure E1.

Figure E1: Calculated noise contours for aircraft operations during October – December 2025



The October – December 65 dB L_{dn} contour lies within the Air Noise Compliance Contour however it is within one decibel near the end of Runway 29. Figure E2 shows a closeup with the one decibel margin line shown intersecting the Air Noise Compliance Contour.

Figure E2: October – December 2025 contours near Runway 29



The parts of the October – December contour within one decibel of the limit are two discrete pinch points located close to the runway. This was previously investigated in 2023, and it was found the pinch points are due to a change in the modelled start of roll position for aircraft using Runway 29 which better represents actual operations. Another contributing factor is that Runway 29 utilisation during October – December 2025 was reasonably high at 9% which is near the historic high of 11%.

Aside from these localised pinch points, aircraft noise during 2025 was approximately 6 - 10 dB below the limit in the southeastern direction. This was confirmed by the noise monitoring terminal data as shown in Table E1 below. At NMT 1, which is to the southeast on the Runway 29 approach, the equivalent compliance noise level is 67 dB L_{dn}. The measured level was 6 dB lower than this for October – December and 10 dB lower over 12 months.

Table E1: Measured aircraft noise for October to December and 12 months

Noise Monitoring Terminal Location	Average Measured L_{dn} for Aircraft Operations	
	October – December 2025	12 Months 2025
NMT 1 (RW29 approach)	61	57
NMT 2 (RW02 approach)	63	63
NMT 3 (RW11 approach)	56	52
NMT 4 (RW20 approach)	63	62