

Memo

To: Aircraft Noise Community Consultative Group
From: Emma Howie – Manager Statutory Planning Auckland Airport
Matthew Dugmore – Statutory Planner Auckland Airport
Date: 9 March 2020
Subject: Noise Mitigation Programme – 2020 Quarter 1 Report

Auckland Airport is required to manage and mitigate the effects of aircraft noise generated by its operation. Condition 10 of Auckland Airport Designation 1100 sets out the requirements for how Auckland Airport should manage the effects of aircraft noise through the implementation of a noise mitigation programme.

Auckland Airport monitors the implementation of the noise mitigation programme. The purpose of this memo is to provide the Aircraft Noise Community Consultative Group (“ANCCG”) a quarterly update on the implementation of the noise mitigation programme. As this is the first report issued to the ANCCG, the following provides a summary of the previous six months (October 2019 – March 2020), and subsequent reports will provide an update for each corresponding quarter.

1. Offer of Noise Mitigation Packages

The 2020 Annual Aircraft Noise Contour (“AANC”) was publicly notified in October 2019, which has receded slightly from its 2019 extent. On 2 March 2020, Auckland Airport sent out 842 offer letters to those properties that were located within the AANC. There were 176 properties located within the high aircraft noise area (“HANA”) and 666 properties located within the moderate aircraft noise area (“MANA”) that received offers.

Community drop-in information sessions on the noise mitigation packages will be held at Kolmar Sports Complex in Papatoetoe, on 10 and 12 March 2020. Representatives from Auckland Airport, Hometech, Marshall Day Acoustics, BT Law, and the Auckland Airport Community Trust will attend these sessions to answer any questions homeowners or occupiers may have on the noise mitigation packages.

Auckland Airport has also arranged to meet with the Mangere-Otahuhu and Otara-Papatoetoe Local Boards to provide them an update on the 2020 Noise Mitigation Programme and they have also been invited to attend the drop-in sessions.

2. Pre-inspections

Prior to homeowners formally accepting a Noise Mitigation offer, a pre-inspection of the property is undertaken to determine the most suitable system to be installed. Also, the total volume of the living area and habitable rooms is calculated to confirm the size of the ventilation system/s required to achieve the necessary air-changes per hour¹. These pre-inspections are carried out by Hometech and attended by an Auckland Airport representative. In the last six months, 12 pre-inspections have been undertaken.

3. Acceptance of Mitigation Packages

Once the property has been inspected, a formal offer letter is sent to the homeowner who can either accept or decline the offer. In the last six months, nine packages have been accepted (five HANA properties and four MANA properties).

¹ At least 1 air-change per hour in living area and 3 air-changes per hour in habitable rooms.

4. Covenant Registrations

Once an offer has been accepted, the homeowner enters into a covenant with Auckland Airport which is registered on the certificate of title. The purpose of the covenant is to provide notice that the Noise Mitigation Package has been installed, that the effectiveness of the package cannot be lessened, and that the equipment cannot be removed without permission from Auckland Airport. An example of the covenant is included in Designation 1100 which is used by Auckland Airport. Currently, there are 15 properties awaiting covenant registration.

5. Installation of Mitigation Packages

When the covenant has been registered, the Airport then prepares an "Order to Proceed to Install". Following this, the packages on average are installed one month later. In the last six months, 23 Noise Mitigation Packages have been installed (five HANA and eighteen MANA).

Installations are undertaken by Hometech, a company that specialises in ventilation systems. One team of contractors is specifically dedicated to pre-inspections and installations as this ensures consistency and better accountability. AIAL is happy with their services and their workmanship to date. All equipment installed is high quality and durable, and meets the technical requirements set out in Condition 10 of Designation 1100.

As the amendments to Designation 1100 through the Notice of Requirement have been confirmed, Auckland Airport is now required to achieve a higher standard of internal noise level of 40 dB L_{dn} for homes within the HANA and MANA. As a result, Auckland Airport has updated the HANA package to include window and door seals. Installing window seals ensure homes within the HANA achieve an internal noise level of 40 dB L_{dn}.

Given properties in the MANA experience between 60-64 dB L_{dn}, it was found by Marshall Day Acoustics that the existing MANA noise mitigation package (which includes a ventilation system, rangehood and heatpump) is sufficient to create an internal noise environment of 40 dB L_{dn} or less with windows closed; and therefore, no new noise attenuation equipment was added to the MANA package through the Notice of Requirement.

6. Auditing of Mitigation Packages

Following installation of noise mitigation packages, Auckland Airport regularly contacts homeowners/tenants to receive feedback and comments on the equipment and process. In September 2019, the Airport released a survey to homeowners who have had a noise mitigation package installed since 2016 (a total of 207 homeowners). Auckland Airport also sends the survey each quarter to homeowners who have had a packaged installed since September 2019 (23 homeowners to date). Currently we have received 49 responses, and the feedback has been generally positive. The purpose of this survey is to identify areas for improvement within the Noise Mitigation Programme process.

To confirm the noise mitigation packages are compliant, Auckland Airport has engaged Marshall Day Acoustics to measure the internal noise environment of 4 properties (two MANA and two HANA) which have had a Noise Mitigation Package installed in the last 12 months. One MANA property (which had a Noise Mitigation package installed on 15 October 2018) has been measured and the results reported show the internal noise level of the property with the window closed is 37 dBA L_{dn} (which is below the noise level required by Designation 1100 of 40 dBA L_{dn}). A copy of the report prepared is included in **Attachment 1**.

Auckland Airport also recently assessed the internal noise environment for a HANA property (which had a Noise Mitigation Package installed on 23 April 2019). We are currently awaiting the results and will share these with ANCCG at the next quarterly meeting.

Attachments

Attachment 1 – Noise measuring results (MANA Property)

Auckland International Airport Ltd

 PO Box 73020, Auckland Airport, Manukau 5120, New Zealand

 aucklandairport.co.nz



 **Auckland
Airport**

Project:	Auckland Airport Noise Mitigation Verification	Document No.:	Ca 001		
To:	Auckland International Airport Ltd	Date:	19 September 2019		
Attention:	Mr Matthew Dugmore	Cross Reference:			
Delivery:	Matthew.Dugmore@aucklandairport.co.nz	Project No.:	20181512		
From:	Laurel Smith	No. Pages:	2	Attachments:	No
CC:					
Subject:	[REDACTED] Verification Measurements				

INTRODUCTION

Auckland International Airport Limited (AIAL) has engaged Marshall Day Acoustics (MDA) to measure the sound insulation performance from aircraft at the below address since treatment was installed under the Airport's Noise Mitigation Programme:

Address	[REDACTED]
Aircraft Noise Area	Moderate (MANA)
Future Aircraft Noise Level	64 - 65 dB L _{dn}

DWELLING DESCRIPTION

The property is a single level duplex with three bedrooms and an open plan living/kitchen/dining room. We observed the following construction materials during the verification measurements on Thursday 1 August 2019:

Roofing/Ceiling	Pitched roof with pressed metal tile roofing. Fibreglass batts ceiling insulation. Flat ceilings of plasterboard (softboard tiles in Bedroom 3).
Walls	Fibre-cement weatherboard on timber framing and plasterboard internal linings.
Joinery	Aluminium joinery with 4-5mm single glazing. Latches and seals generally in good condition.

TREATMENT DESCRIPTION

This property is inside the MANA and therefore the noise mitigation treatment included a ventilation system for habitable rooms and a heat pump in the main living space. The existing ducted range hood was not replaced at the owner's request.

The Noise Mitigation Programme does not define a sound insulation performance standard for houses in the MANA. Houses in the High Aircraft Noise Area (HANA) have a design criterion of 40 dB L_{dn} in habitable rooms. In both the HANA and the MANA, ventilation systems are subject to noise performance standards.

MEASUREMENT RESULTS

We carried out measurements of aircraft flyovers simultaneously indoors and outdoors with doors and windows closed to determine the sound insulation performance of the house. We measured on Thursday 1 August between 9:30am and 11:00am, capturing six turbo-prop and four jet aircraft arrival flyovers.

The results are summarised in Table 1 below. All rooms performed well with outside to inside noise reductions ranging from 28 to 34 decibels. The open plan living area did not perform as well as the bedrooms, which we expect is due to there being more hard surfaces and fewer soft furnishings in the living area which means sound energy wouldn't be absorbed and dissipated as quickly. If future aircraft noise levels reach the allowable limit at this property (64 – 65 dB L_{dn}), then the indoor levels would range from 31 to 37 dB L_{dn}. This is below the 40 dB L_{dn} design criterion for houses in the HANA although we note that no internal criterion applies in the MANA.

Table 1: Measured Noise Reduction from Aircraft Flyovers

Room	Future Outdoor Aircraft Noise Level (dB L _{dn})	Average Measured Noise Reduction	Future Indoor Aircraft Noise Level (dB L _{dn})
Bedroom 1	65	33	32
Bedroom 2	65	33	32
Bedroom 3	65	34	31
Kitchen/Dining/Living	65	28	37

VENTILATION SYSTEM NOISE

Under the noise mitigation programme, ventilation systems are required to be designed and installed to create no more than:

- 40 dB L_{Aeq} in the principal living room
- 30 dB L_{Aeq} in the other habitable rooms
- 40 dB L_{Aeq} in any hallway.

In some cases it is not possible to measure as low as 30 dB L_{Aeq} during the day when there are high background noise levels from other outdoor noise sources. In this situation, we make a subjective quality assessment of the ventilation noise, checking for high levels or unsatisfactory character.

Table 2 summarises the results from this address. Noise from the ventilation system measured in all the rooms achieved the relevant criterion. We didn't measure in the hallway, however our subjective assessment was that the volume and quality of sound from the ventilation system in the hallway was satisfactory.

Table 2: Measured Ventilation Noise Levels

Room	Criterion (dB L _{Aeq})	Measured Noise Level (dB L _{Aeq})	Achieves Criterion?
Bedroom 1	30	28	Yes
Bedroom 2	30	28	Yes
Bedroom 3	30	29	Yes
Open plan kitchen/dining/living	40	33	Yes
Hallway	40	-	Passed subjective quality check

We trust this information is satisfactory. Please feel free to contact us if you have any questions.