

6 November 2019

Your Reference: Lot 237, 64 Raceview Avenue, Hendra PO: PB19-049/060

Our Reference: 0234 R01 0.docx

Received

19/12/2019

BCC DS

Shane Windsor
Planbuild Homes
PO Box 1646
Kedron Qld 4031

Dear Shane,

RE: Compliance with Noise from Airport Operations ANEF from Brisbane Airport

1. Introduction

This report is to address the noise attenuation requirements for the above property, for compliance with the internal noise levels as referenced by Australian Standard AS 2021-2015 *Acoustics – Aircraft noise intrusion – Building siting and construction*. This standard addresses the noise from take-off and landing and not ground movements or taxiing. We have addressed future airport operations from the new runway. We have assessed Boeing 777 aircraft on takeoff as these are the noisiest aircraft utilising the airport.

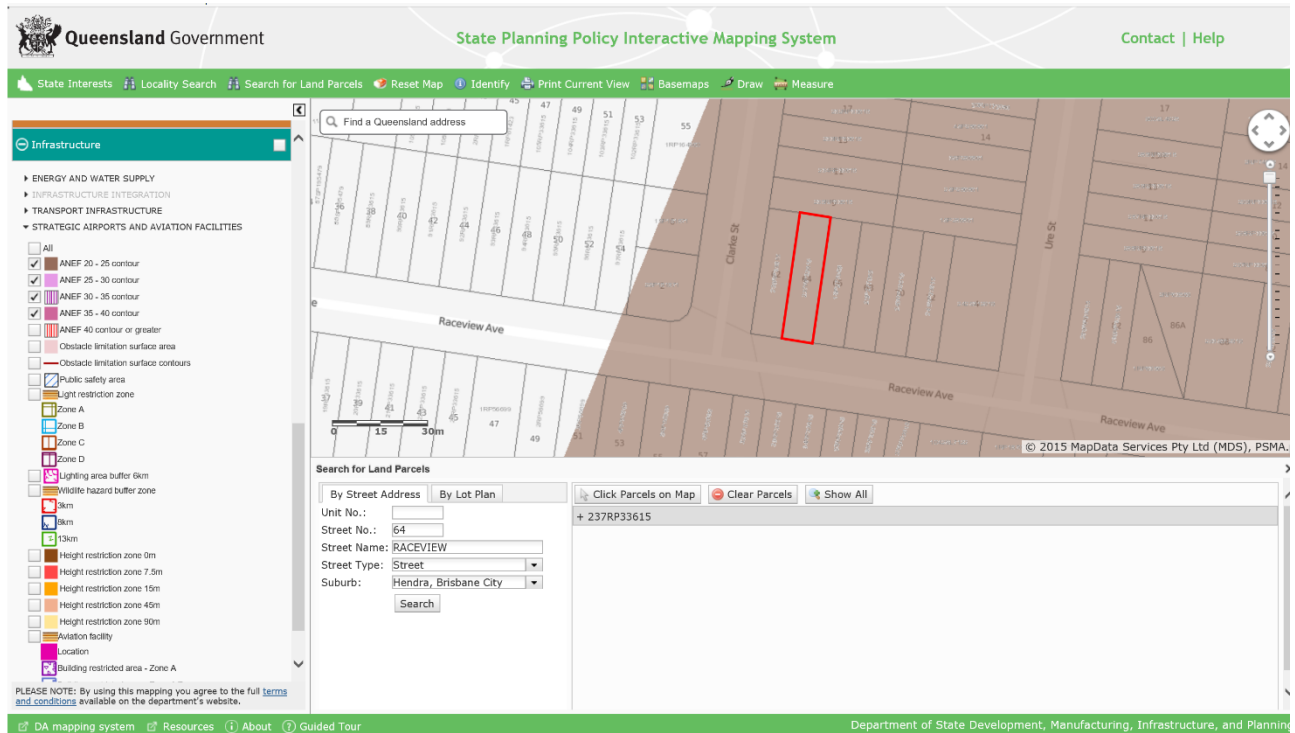
The assessment has been based on the following information:

1. Australian Standard AS 2021-2015 *Acoustics – Aircraft noise intrusion – Building siting and construction* (AS 2021);
2. Drawings by Planbuild Homes for above property, Ref: PB19-049 Sheets 02-07, Issue B, dated 4/11/2019;
3. Overlay accessed DSDMIP website 6 November 2019;
4. Airfleets.net, (<https://www.airfleets.net/listing/b747-11-statasc.htm>).

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2. Location

Figure 1: Location of site and ANEF 20-25 Accessed DSDMIP website 6 November 2019



3. Internal Assessment Criteria

The affected property lies within the overlays of the ANEF 20-25. The ANEF 20 boundary is not fixed due to aircraft flight path variance. Table 3.3 of AS 2021 provides the indoor design sound levels for aircraft noise reduction. The relevant section relating to houses is below:

Table 1: From AS 2021, Table 3.3 Indoor Design Sound Level For Determination of Aircraft Noise Reduction

Building Type	Activity	Indoor Design Sound Level*, dB(A)
<i>Houses, home units, flats, caravan parks</i>	Sleeping areas, dedicated lounges	50
	Other habitable spaces	55
	Bathrooms, toilets, laundries	60

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4. Determining Noise Levels

AS 2021 is made up with a lot of tables showing noise levels from various aircraft based on the distance from the airport and distance off the centre line of the runway. We have determined that the appropriate aircraft are Boeing 777-300. There is currently two movements by Boeing 747-400 aircraft during the middle of the day. This flight is a Qantas direct flight to Los Angeles. Several reasons for not including the 747 aircraft:

1. The 747-400 are aging. Current model is 747-8;
2. Qantas does not have an order for another 747 type aircraft;
3. Approximately 50 747s are being retired every year;
4. Only 6-8 are being built every year.

Inline with the methodology of AS-2021 we have measured the following parameters:

Predicted noise levels are L 72 dB(A) based on the following:

Type of Aircraft	Boing 777-300 Departures
Take off or Landing	Take Off
DS	900 m
DL	5,200 m
DT	9,500 m
Height Difference	0 m
Noise level from Table 3.19(B) AS 2021:2015	72 dB(A)

Figure 2: From AS 2021 showing the required measurements to determine noise levels

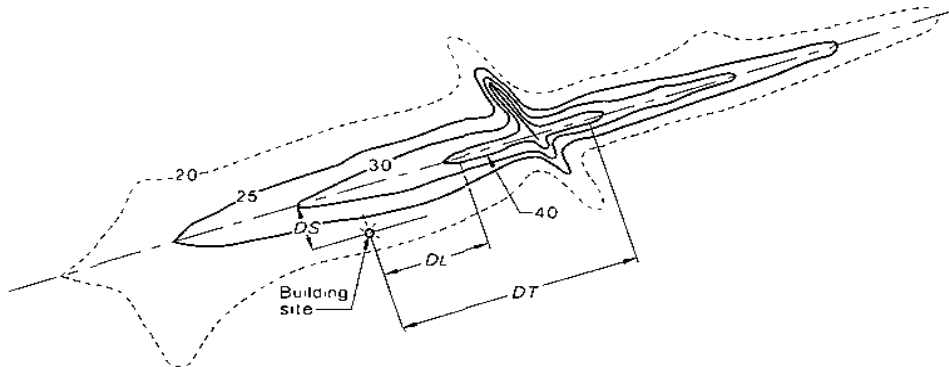


FIGURE 3.1 DETERMINATION OF DS , DL AND DT FOR STRAIGHT FLIGHT PATHS

5. Assessment

Section G2.7 of AS 2021 states that 'the aircraft noise attenuation required of each component is determined from the equation:'

$$ANA_c = ANR + 10 \log_{10} [(S_c/S_r) \times (3/h) \times 8TN] - K_c$$

Where:

ANA_c = the aircraft noise attenuation required of the component, in dB(A)

ANR = required aircraft noise reduction, in dB(A)

S_c/S_r = area ratio of the component

h = ceiling height of room, in metres

T = reverberation time of room, in seconds

N = number of components

K_c = orientation effect for the component, in decibels

Based on floor plans and elevations, glazing and building treatments were determined using the methodology within the standard. The following recommendations are made:

6. Calculations

Below are the results of the calculations

Table 2: Predicted Road Traffic Noise Impacts at Building Facades.

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Room	Component	Ext Noise Level dB	AREA of Element (m ²)	Sc/Sf	K _c	ANA	ANR or Req R _w
Kitchen Living Dining	glass	72	22.11	0.37	6	19	24
	wall	72	53.29	0.89	6	23	28
Bed 5	glass	72	2.16	0.19	6	18	23
	wall	72	8.24	0.74	6	24	29
Laundry	glass	72	3.045	0.05	6	5	10
	wall	72	1.115	0.02	6	1	6
Rumpus	roof	72	20	1.00	6	25	30
	glass	72	4.41	0.22	6	18	23
	wall	72	26.79	1.34	6	26	31
Study	roof	72	22.4	1.00	6	25	30
	glass	72	1.53	0.07	6	13	18
	wall	72	24.47	1.09	6	25	30
Office	roof	72	8.75	1.00	6	22	27
	glass	72	1.71	0.20	6	15	20
	wall	72	7.39	0.84	6	21	26
Bed 1 inc WIR	roof	72	22.4	1.00	6	27	32
	glass	72	5.4	0.24	6	21	26
	wall	72	33.6	1.50	6	29	34
Bed 2 and 3	roof	72	11.52	1.00	6	27	32
	glass	72	1.08	0.09	6	17	22
	wall	72	7.24	0.63	6	25	30
Ensuite	roof	72	9.6	1.00	6	22	27
	glass	72	1.08	0.11	6	12	17
	wall	72	6.72	0.70	6	20	25
Bathroom	roof	72	6	1.00	6	22	27
	glass	72	0.9	0.15	6	14	19
	wall	72	4.3	0.72	6	20	25

7. Recommendations

Any wall or ceiling under R_w 35 could be considered standard construction.

In general all rooms except Bedroom 1 could be glazed in standard glass of 4 mm float without acoustic seals.

Bedroom 1 and WIR rating for glazing would be met with 4 mm glass with acoustic seals, however this is not mandatory, but the rating (R_w 26) must be maintained.

8. Conclusion

We have reviewed all the building elements including the walls and roof and concluded that if the recommendations are followed the house will meet the noise attenuation requirements.

We hope that this information proves satisfactory.

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Yours Faithfully

Alan Subkey

Director