

DISTRICT-WIDE MATTERS

NOISE – Noise

Introduction

Noise can create issues and may impact people’s health and their enjoyment of the District. Noise can vary in its source, character, duration and time of occurrence creating a range of adverse environmental *effects*.

Noise provisions in this section provide certainty to the community around what levels of noise are acceptable when taking account of the noise producer and the receiving *environment*.

Rural production activities are the predominant activities in the rural area of the District. There is pressure for increased rural lifestyle living which can seek different expectations for the rural area. This can lead to complaints about the noise generated by rural production activities as part of day to day activities.

Residential amenity is especially sensitive to adverse noise *effects*. Noise provisions have been established to protect residential communities from such adverse *effects*, especially during night-time hours.

Specific noise limits are covered in Manfeild Park *Zone* and the Special Development *Zone*. Those provisions appear in the respective chapters, and are not reproduced below.

Issues

Refer also GEN-I4

NOISE-I1	Noise can result in significant adverse environmental <i>effects</i> on the existing <i>environment</i> .
NOISE-I2	Noise <i>sensitive activities</i> can be adversely affect by noisy uses and activities in the District.
NOISE-I3	Recognising that evening noise levels typically reduce in all zones compared with daytime noise and contribute to local amenity.
NOISE-I4	Noise levels generated by land use activities can vary within a <i>zone</i> and between zones.

NOISE-I5	Rural and rural lifestyle uses can have different amenity expectations which can result in complaints.
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Objectives

NOISE-O1	To ensure noise generated from activities is appropriate to the character and level of amenity anticipated in the surrounding <i>environment</i> and human health and safety.
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NOISE-O2	To avoid, remedy or mitigate the adverse <i>effects</i> of noise upon people's health and amenities (GEN-O2).
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Policies

NOISE-P1	To ensure noise level standards protect dwellings and other noise <i>sensitive activities</i> from unreasonable noise levels.
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NOISE-P2	To ensure noise levels within the Town Centre and Mixed Use <i>Zones</i> and the General Industrial <i>Zone</i> enable the functioning of these activities without resulting in significant adverse environmental <i>effects</i> on adjacent <i>residential activities</i> .
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NOISE-P3	To consider appropriate mitigation measures where noise levels exceed the <i>zone</i> or <i>zone</i> interface noise limits.
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NOISE-P4	To provide for noise associated with rural production activities in the General Rural <i>zone</i> .
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NOISE-P5	To apply the concepts of the NZ Standard for Airport Noise (NZS 6805:1992) to airports in the District, and to the land in the immediate vicinity of airports.
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NOISE-P6	To exclude any new school, place of assembly, hospital, <i>dwelling</i> or other accommodation from the Air Noise Area around Palmerston North Airport.
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NOISE-P7	To mitigate the adverse <i>effects</i> of aircraft noise on any new school, place of assembly, hospital, <i>dwelling</i> or other accommodation in the Inner and Outer Control Areas around Palmerston North Airport.
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Rules

Rules in this chapter apply district-wide and the chapter needs to be read in conjunction with the District Plan maps, relevant appendices and provisions of the applicable *zone*.

Permitted Activities (PER)

NOISE-R1	All activities are permitted provided they comply with the performance standards NOISE-ST1 to NOISE-ST4.
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Standards for Permitted Activities

For all *zones*, the *permitted activities* specified in NOISE-R1 must comply with the following standards:

NOISE-ST1	Noise levels shall be measured in accordance with NZS 6801:2008 Measurement of Environmental Sound and assessed in accordance with NZS 6802:2008 Acoustics – Environmental Noise unless otherwise specified.	
NOISE-ST2	All activities must comply with the following noise levels for the <i>zone</i> the activity is located in. Refer to Table 5 – Noise Levels.	
NOISE-ST3	Sounds generated by construction, maintenance and demolition activities will be assessed, predicted, measured, managed and controlled by reference to NZS6803:1999 Acoustics – Construction Noise.	
NOISE-ST4	Noise from the following activities are not controlled by NOISE-ST2 in this Plan:	
NOISE-ST4.1	Aircraft being operated during or immediately before or after flight.	
NOISE-ST4.2	Vehicles being driven on a <i>road</i> , excluding the use of airbrakes on trucks.	

NOISE-ST4.3	Trains other than when being tested (when stationary), maintained, loaded or unloaded.
NOISE-ST4.4	Rural production activities, except for <i>intensive farming</i> .
NOISE-ST4.5	Crowd noise at any area zoned Open Space.
NOISE-ST4.6	Emergency Services Sirens.
NOISE-ST4.7	Military Training Activities covered by GEN-R1 to GEN-R3.

Guidance Notes:

1. Sound from commercial renewable energy generation will be assessed, predicted, measured and controlled by reference to the NZS6808:1998 Acoustics – The Assessment and Measurement of Sound from Wind Turbine Generators.
2. Noise from Helicopters using separate helicopter landing areas that are not part of an airport will be assessed according to NZS 6807:1994 Noise Management and Land Use Planning for Helicopter Landing Areas.
3. Noise associated with aircraft operations will be assessed by NZS 6805:1992 Airport Noise Management and Land Use Planning.
4. Unreasonable or excessive noise can be controlled by reference to the specific provisions of the Resource Management Act (1991), specifically sections 16 and 327.

Discretionary Activities (DIS)

NOISE-R2	Any activity that does not meet the noise standards for a <i>Permitted Activity</i> specified in NOISE-ST1 to NOISE-ST4, or is not specifically provided for in this plan, shall be a <i>Discretionary Activity</i> .
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Table 5 – Noise Levels

ZONE the activity is located in	Time Period	Potentially Affected Zone (measured at any point within the boundary of any other site in the zone)		
		General Residential/Settlement	General Rural	Town Centre & Mixed Use
General Residential/Settlement <i>(these apply only to home occupations and non-residential activities)</i>	7am - 10pm	45db L _{Aeq} (15 mins)		
	10pm – 7am	35db L _{Aeq} (15 mins)		
	10pm-7am	55db L _{Amax}		
Open Space	7am - 7pm	55db L _{Aeq} (15 mins)		
	7pm - 10pm	50db L _{Aeq} (15 mins)		
	10pm - 7am	40db L _{Aeq} (15 mins)		
	10pm - 7am	70db L _{Amax}		
General Rural	7am - 7pm	55db L _{Aeq} (15 mins)	55db L _{Aeq} (15 mins)	
	7pm - 10pm	50db L _{Aeq} (15 mins)	50db L _{Aeq} (15 mins)	
	10pm - 7am	40db L _{Aeq} (15 mins)	40db L _{Aeq} (15 mins)	
	10pm - 7am	70db L _{Amax}	70db L _{Amax}	
General Industrial	7am - 7pm	55db L _{Aeq} (15 mins)	55db L _{Aeq} (15 mins)	
	7pm - 10pm	50db L _{Aeq} (15 mins)	50db L _{Aeq} (15 mins)	
	10pm - 7am	45db L _{Aeq} (15 mins)	45db L _{Aeq} (15 mins)	
	10pm - 7am	75db L _{Amax}	75db L _{Amax}	
Town Centre and Mixed Use	7am - 7pm	55db L _{Aeq} (15 mins)		
	7pm - 10pm	50db L _{Aeq} (15 mins)		
	10pm - 7am	45db L _{Aeq} (15 mins)		
	10pm - 7am	75db L _{Amax}		
	At any time			65db L _{Aeq} (15 mins)

	10pm - 7am		85db L _{Amax}
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Guidance Note: The noise provisions for Stadium *Zone* and the Special Development *Zone* are contained in the specific *zone* chapters.

Explanation

The NZ Standard for Airport Noise is concerned with managing aircraft noise in the vicinity of airports, to protect community health and *amenity values*. It is intended to ensure communities living close to airports are properly protected from the *effects* of aircraft noise, while recognising the need to be able to operate an airport efficiently.

Detailed investigative work using methods recommended by the NZ Standard has identified large areas of land surrounding Ohakea Air Base and Palmerston North Airport which are subject to varying levels of noise intrusion from aircraft operations. A level of noise nuisance also results at times from light aircraft use of the Feilding Aerodrome at Taonui. The predicted future noise impact of Palmerston North and Ohakea airports is shown on Figure 26 and Figure 46 (Settlement Zone Chapter). *Council* recognises that all three airports are an important physical resource for the Manawatū region, including Palmerston North. They are key links in the regional transport network and national defence system, and together they enable people within the region to provide for their social and economic well-being. It is therefore essential to put in place appropriate protection to ensure the efficient on-going use and development of the airports.

Council's plan of action for Ohakea and Taonui airports will emphasise working with the airfield operators and local communities to discuss noise issues and secure agreement to a noise management plan. This approach is in line with the NZ Standard's philosophy. The Royal New Zealand Air Force is preparing a Land Management Plan for RNZAF Base Ohakea, which will adopt the NZ Standard as the basis of control for airfield noise and as a guide to appropriate land use controls.

For Palmerston North Airport, *Council* has followed the general approach suggested by the NZ Standard, and defined three areas around the airport within which varying levels of control will apply, based on the predicted degree of noise exposure in each area. The Palmerston North City *Council* has included parallel controls within its District Plan for the affected parts of the City, using the same data. The three distinct areas are shown in NOISE-APP1 – Air Noise Control Areas: Palmerston North Airport and on the relevant Planning Maps, and are:

Air Noise Area

The land with the highest level of aircraft noise exposure (above the 65 dBA L_{dn} predicted noise contour). Within this area any new noise *sensitive activities*, such as

dwellings, are prohibited due to the adverse *effect* that aircraft noise will have on the health of their occupiers.

Inner Control Area

This incorporates the land between the 60 dBA L_{dn} and 65 dBA L_{dn} noise contours. Within this area *habitable rooms* associated with any new educational or *residential activity* will be required to be insulated to a standard which will ensure that any disturbance to sleep or conversation attributable to aircraft operational noise is properly mitigated. The construction must meet a noise insulation rating of 20 decibels for *habitable rooms*, 25 decibels for classrooms and communal activities, and 30 decibels for bedrooms. These standards are based on both the maximum L_{dn} noise prediction and the maximum single noise event generated by an aircraft at night.

Outer Control Area

Which incorporates the land between the 55 dBA L_{dn} and 60dBA L_{dn} contours. In the Outer Control Area disturbance to sleep has been identified as having the greatest potential for disruption to people and for causing complaint about aircraft activity. The insulation requirement for new dwellings in this area is 25 Decibels for bedrooms, to protect against sleep interference, and 20 decibels for classrooms and communal activities. (As the maximum aircraft noise level in this *zone* is five decibels less than in the Inner Control *Zone*, sound insulation requirements are also five decibels lower).

Materials and methods of construction are described in NOISE-SCHED1, NOISE-SCHED2, NOISE-SCHED3. If properly built and maintained, *buildings* constructed of those materials will be deemed to provide the following sound insulation against aircraft noise:

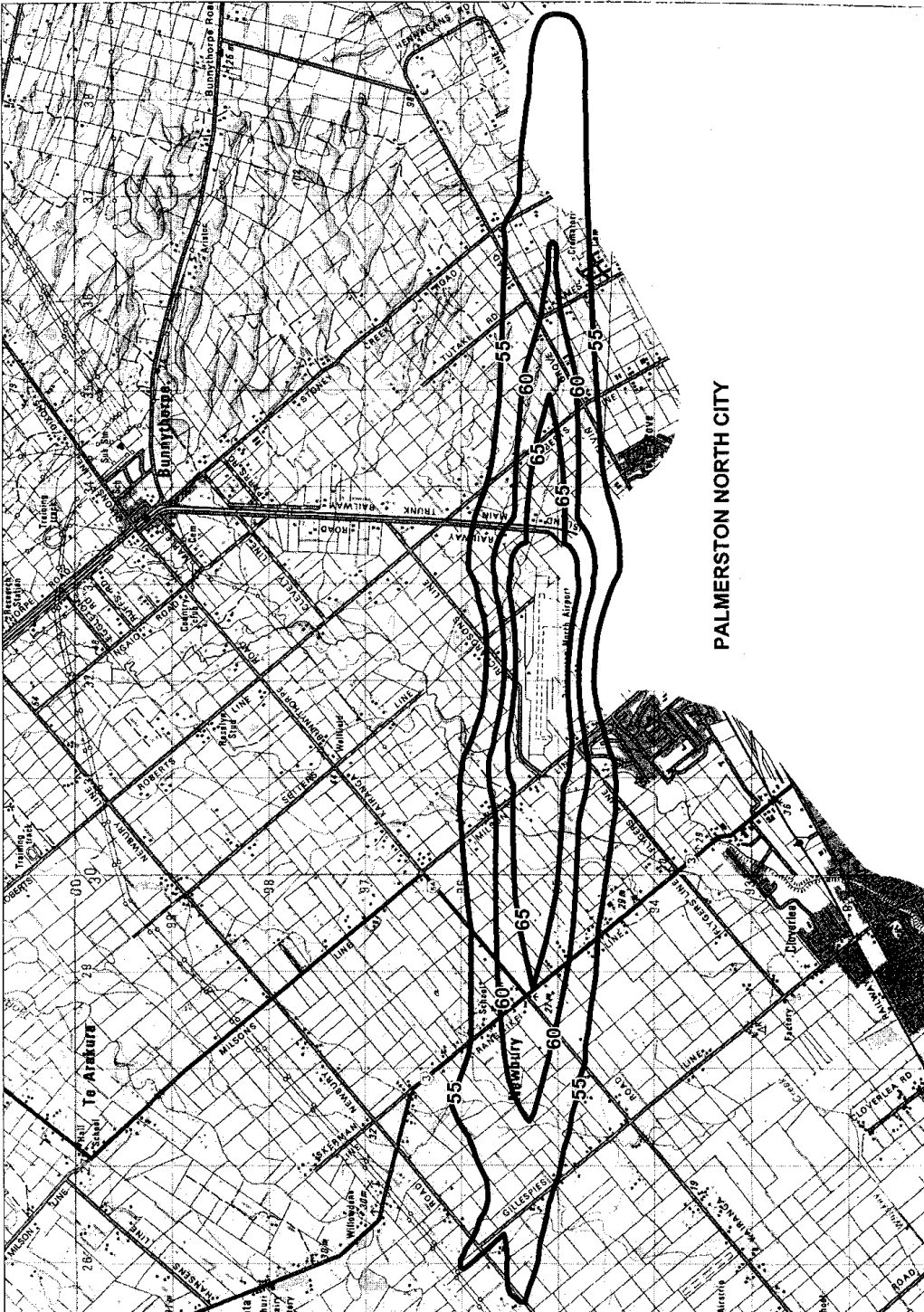
NOISE-SCHED1 <i>(Schedule P)</i>	20 decibels
NOISE_SCHED2 <i>(Schedule Q)</i>	25 decibels
NOISE-SCHED3 <i>(Schedule R)</i>	30 decibels

The materials provided in the Schedules include a safety factor of 5dBA to ensure that when built the insulation does not fail to provide the requisite degree of aircraft noise reduction. Accordingly, to be permitted, any proposal using alternative means of insulation to that prescribed in the Schedules, shall also include a 5dBA safety margin.

The responsibility for mitigating air noise impacts should not fall solely on present and future land owners around the airport. The airport operators should also play their part by working within noise limits and by looking for the best practicable option for noise reduction. To this end, the Palmerston North District Plan contains specific measures to limit noise from the

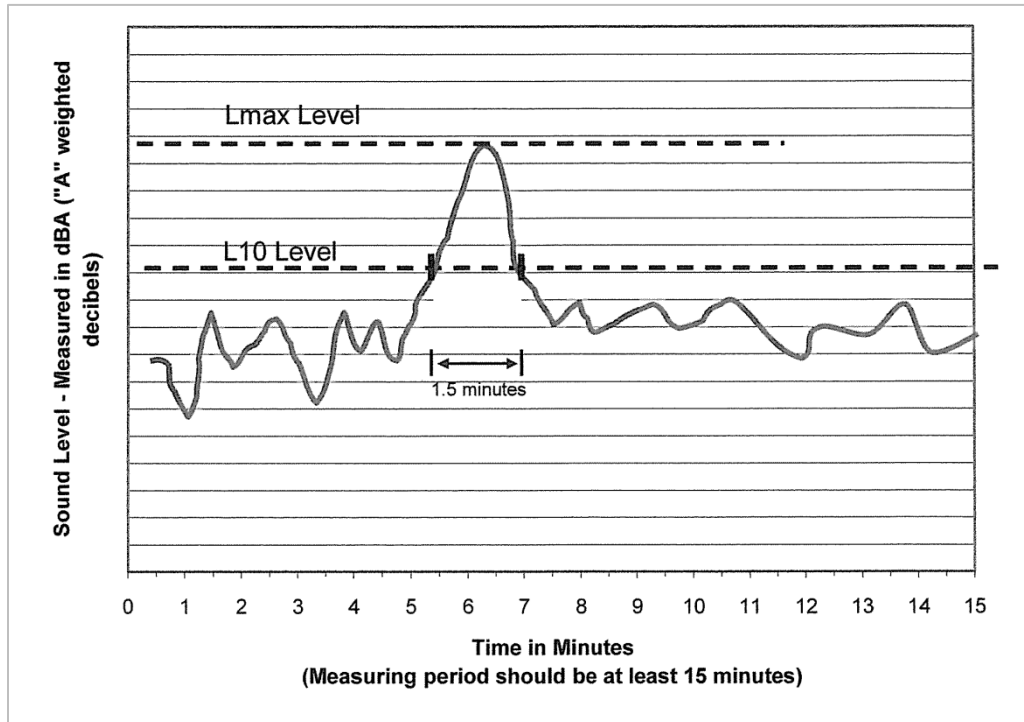
operation of the Airport. This includes a requirement for aircraft operations associated with the Airport to comply with a 65 L_{dn} limit, measured at the air noise boundary.

Subdivision within the area affected by the air noise controls will be dealt with through the Plan's requirement to identify a potential house *site* for each new allotment which meets the Plan's standards. If a new lot is wholly within the Air Noise Area, for example, this requirement will not be met and the subdivision may be declined accordingly.



SOURCE: Palmerston North Airport Noise Study - Air Plan Consultants Ltd. (1998 Update)

Figure 26 – Palmerston North Airport, Calculated Noise contours (DBA LDN)



Notes:

1. The L_{max} noise level is the highest sound level recorded during the measuring period.
2. The L_{10} noise level is the sound level which is reached or exceeded for 10% of the measuring period, e.g. over a 15 minute measuring period, it will be reached or exceeded for 1.5 minutes.
3. L_{dn} noise levels are used in this plan in relation to airport noise. They indicate a 24-hour daily sound exposure averaged usually over a three-month period, with 10dB being added to night-time levels to take account of the increased annoyance caused by noise at night. L_{dn} levels cannot therefore be compared the L_{10} and L_{max} levels.
4. Note, this is a greatly simplified attempt to explain some terms used in noise standards. For precise definitions, please refer to NZ Standards 6801:1991, 6802:1991 and 6805:1992.

Figure 27 - Interpreting Noise Standards

NOISE-SCHED1 – *Schedule P* 20dB Noise Insulation

Refer Rules: GRUZ-MD3, NH-MD4, GEN-AC1 to GEN-AC25, GRUZ-ST12

Roof/Upper floor ceiling

OPTIONS	DESCRIPTION OF CONSTRUCTION
1	<p>ROOF</p> <p>Pitched roof clad with tiles, or not less than 0.5mm roofing iron, or 6mm corrugated cellulose-cement.</p> <p>CEILING</p> <p>12.5mm plasterboard fixed to underside of horizontal ceiling joist or ceiling battens.</p> <p>INSULATION</p> <p>Fibre insulation batt or blanket with a thickness of not less than 94mm and density of not less than 12 kg/m³ (such as ceiling Pink Batts R2.2 or equivalent), laid between ceiling joists.</p>
2	<p>ROOF</p> <p>Steel trough roof or other roofing iron, not less than 0.5mm thick.</p> <p>CEILING</p> <p>One layer of 12.5mm plasterboard fixed to the same timber framework as the roof but with a separation of not less than 150mm between the roofing and the plasterboard.</p> <p>INSULATION</p> <p>Fibre insulation batt or blanket with a thickness of not less than 94mm and density of not less than 12 kg/m³ (such as ceiling Pink Batts R2.2 or equivalent), laid between ceiling joists or compresses over purlins (can be combined with integral waterproof membrane).</p>

Outer Walls

OPTIONS	DESCRIPTION OF CONSTRUCTION
1	<p>CONSTRUCTION</p> <p>Conventional timber stud-framed walls.</p> <p>EXTERNAL CLADDING</p> <ol style="list-style-type: none"> 1. Not less than 18mm thick timber weather board; or 2. Not less than 9mm thick compressed fibre cement sheets; or 3. Not less than 18mm thick solid plaster. <p>INTERNAL LINING</p> <p>Not less than 9.5mm thick plasterboard.</p> <p>CAVITY INSULATION</p> <p>Fibre insulation batt or blanket with a thickness of not less than 94mm and density of not less than 12 kg/m³ (such as Wall Pink Batts R2.2 or equivalent).</p>
2	<p>CONSTRUCTION</p> <p>Conventional brick veneer installed in accordance with clearly presented and adequate technical information on installation supplied by the manufacturer.</p> <p>INTERNAL LINING</p> <p>Not less than 9.5mm thick plasterboard.</p>

Outer Windows

OPTIONS	DESCRIPTION OF CONSTRUCTION
1	<p>CONSTRUCTION</p> <p>Single glass windows in an aluminium, steel, timber or PVC frame with a positive sealing arrangement.</p> <p>AREA</p> <p>Up to 50% of the total exterior wall area.</p> <p>GLAZING</p>

	Not less than 6mm thick monolithic or laminated glass.
2	<p>CONSTRUCTION</p> <p>Double glazed or double windows in an aluminium, timber or PVC frame with a positive sealing arrangement.</p> <p>AREA</p> <p>Up to 50% of the total exterior wall area.</p> <p>GLAZING</p> <p>Two panes each of a minimum thickness of 4mm with an airspace of not less than 6mm.</p>

Outer Doors

OPTIONS	DESCRIPTION OF CONSTRUCTION
1	Solid core door of a thickness not less than 35mm and a superficial density of not less than 20 kg/m ² complete with soft gasket around sides and top and drop seal at base.

Notes: The required degree of insulation will only be provided if the specified level of integrity is maintained throughout the envelope of the *building* in respect to areas in which sound insulation requirements apply. If a *sound transmission path* is provided from outside the *building* to inside the insulated room in question via a path that is not fully and appropriately insulated against, then the design of the *building* shall not comply with the permitted activity performance standard. In determining the insulating performance of roof/ceiling arrangements, roof spaces are assumed to have no more than the casual ventilation typical of the jointing capping and guttering details used in normal construction.

Mechanical Ventilation of spaces with non-opening windows or with sound-insulated windows shall be provided in accordance with provisions of the New Zealand Building Code G4 in a manner which does not compromise sound insulation.

In all cases opening windows are permissible. Where non-opening windows are used, an early warning smoke detection system should be installed and maintained within the premises (particularly in sleeping rooms and exit ways) in accordance with an approved New Zealand

Code or Standard or AS3786:1993. Where mechanical ventilation is provided devices should be installed to shut down or close off the system to prevent the travel of fire and smoke products.

NOISE-SCHED2 – *Schedule Q* 25dB Noise Insulation

Refer Rules: GRUZ-MD3, NH-MD4, GEN-AC1 to GEN-AC25, GRUZ-ST12

Roof / Upper Floor Ceiling

OPTIONS	DESCRIPTION OF CONSTRUCTION
1	<p>ROOF</p> <p>Pitched roof clad with tiles, or greater than 0.5mm roofing iron, or 6mm corrugated cellulose-cement.</p> <p>CEILING</p> <p>12.5mm plasterboard fixed to underside of horizontal ceiling joist or ceiling battens.</p> <p>INSULATION</p> <p>Fibre insulation batt or blanket with a thickness of not less than 94mm and density of not less than 12 kg/m³ (such as Ceiling Pink Batts R2.2 or equivalent), laid between ceiling joists.</p>
2	<p>ROOF</p> <p>Steel trough roofing or other roofing iron, not less than 0.5mm thick.</p> <p>CEILING</p> <p>Two layers of 9.5mm thick plasterboard fixed to the same timber framework as the roof but with a separation of not less than 150mm between the roofing and the plasterboard.</p> <p>INSULATION</p> <p>Fibre insulation batt or blanket with a thickness of not less than 94mm and density of not less than 12 kg/m³ (such as Ceiling Pink Batts R2.2 or equivalent), laid between ceiling joists or compressed over purlins (can be combined with integral waterproof membrane).</p>

Outer Walls

OPTIONS	DESCRIPTION OF CONSTRUCTION
1	<p>CONSTRUCTION</p> <p>Conventional timber stud-framed walls.</p> <p>EXTERNAL CLADDING</p> <p>Not less than 18mm thick timber weather board; or</p> <p>Not less than 9mm thick compressed fibre cement sheets; or</p> <p>Not less than 18mm thick solid plaster.</p> <p>INTERNAL LINING</p> <p>Not less than 12.5mm thick plasterboard.</p> <p>CAVITY INSULATION</p> <p>Fibre insulation batt or blanket with a thickness of not less than 94mm and density of not less than 12 kg/m³ (such as Wall Pink Batts R2.2 or equivalent).</p>
2	<p>CONSTRUCTION</p> <p>Conventional brick veneer installed in accordance with clearly presented and adequate technical information on installation supplied by the manufacturer.</p> <p>INTERNAL LINING</p> <p>Not less than 12.5mm thick plasterboard.</p>

Outer Windows

OPTIONS	DESCRIPTION OF CONSTRUCTION
1	<p>CONSTRUCTION</p> <p>Single glass windows in an aluminium, steel, timber or PVC frame with a positive sealing arrangement. No through-frame ventilation.</p>

	<p>AREA</p> <p>Up to 50% of the total exterior wall area.</p> <p>GLAZING</p> <p>Not less than 7mm thick Hush Glass.</p>
2	<p>CONSTRUCTION</p> <p>Double glazed or double windows in an aluminium, steel, timber or PVC frame with not less than a 13mm air space between panes, and a positive sealing arrangement. No through-frame ventilation.</p> <p>AREA</p> <p>Up to 50% of the total exterior wall area.</p> <p>GLAZING</p> <p>One pane not less than 7.5mm and the other not less than 6mm thick with the panes being of dissimilar thickness.</p>
3	<p>CONSTRUCTION</p> <p>Double glass windows in separate timber frames with not less than a 70mm air space between panes, and a positive sealing arrangement. No through-frame ventilation.</p> <p>AREA</p> <p>Up to 50% of the total exterior wall area.</p> <p>GLAZING</p> <p>One pane not less than 6mm and the other not less than 5mm thick with the panes being of dissimilar thickness.</p>
4	<p>CONSTRUCTION</p> <p>Completely sealed double glass windows in separate timber frames with not less than a 50mm air space between panes, and a positive sealing arrangement. No through-frame ventilation.</p> <p>AREA</p> <p>Up to 20% of the total exterior wall area.</p> <p>GLAZING</p>

	Each pane of dissimilar thickness but neither being less than 5mm thick.
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Outer Doors

OPTIONS	DESCRIPTION OF CONSTRUCTION
1	Solid core door of a thickness not less than 42mm and a superficial density of not less than 24 kg/m ² complete with soft gasket around sides and top and drop seal at base.

Flooring (exposed to outside noise via under-floor)

OPTIONS	DESCRIPTION OF CONSTRUCTION
1	<p>CONSTRUCTION</p> <p>Conventional timber joist floor and thermal insulation.</p> <p>UPPER BOARDS (floor base inside room)</p> <p>Not less than two sheets of 18mm particle board.</p>
2	<p>CONSTRUCTION</p> <p>Conventional timber joist floor and thermal insulation.</p> <p>UPPER BOARDS (floor base inside room)</p> <p>Not less than one sheet of 18mm particle board.</p> <p>UNDER JOISTS (sub floor)</p> <p>Not less than one sheet of 6mm thick compressed fibre cement sheets.</p>

Notes: The required degree of insulation will only be provided if the specified level of integrity is maintained throughout the envelope of the *building* in respect to areas in which sound insulation requirements apply. If a *sound transmission path* is provided from outside the *building* to inside the insulated room in question via a path that is not fully and appropriately insulated against, then the design of the *building* shall not comply with the permitted activity performance standard. In determining the insulating performance of roof/ceiling arrangements,

roof spaces are assumed to have no more than the casual ventilation typical of the jointing capping and guttering details used in normal construction.

Mechanical Ventilation of spaces with non-opening windows or with sound-insulated windows shall be provided in accordance with provisions of the New Zealand Building Code G4 in a manner which does not compromise sound insulation.

In all cases opening windows are permissible. Where non-opening windows are used, an early warning smoke detection system should be installed and maintained within the premises (particularly in sleeping rooms and exit ways) in accordance with an approved New Zealand Code or Standard or AS3786:1993. Where mechanical ventilation is provided devices should be installed to shut down or close off the system to prevent the travel of fire and smoke products.

NOISE-SCHED3 – *Schedule R* 30dB Noise Insulation

Refer Rules: GRUZ-MD3, NH-MD4, GEN-AC1 to GEN-AC25, GRUZ-ST12

Roof / Upper Floor Ceiling

OPTIONS	DESCRIPTION OF CONSTRUCTION
1	<p>ROOF</p> <p>Pitched roof clad with tiles, or greater than 0.5mm roofing iron, or 6mm corrugated cellulose-cement.</p> <p>CEILING</p> <p>Two layers of 12.5mm plasterboard fixed to underside of horizontal ceiling joist or ceiling battens.</p> <p>INSULATION</p> <p>Fibre insulation batt or blanket with a thickness of not less than 94mm and density of not less than 12 kg/m³ (such as Ceiling Pink Batts R2.2 or equivalent), laid between ceiling joists.</p>
2	<p>ROOF</p> <p>Steel trough roofing not less than 0.6mm thick.</p> <p>CEILING</p> <p>Two layers of 12.5mm thick plasterboard fixed to the same timber framework as the roof but with a separation of not less than 150mm between the roofing and the plasterboard.</p> <p>INSULATION</p> <p>Fibre insulation batt or blanket with a thickness of not less than 94mm and density of not less than 12 kg/m³ (such as Ceiling Pink Batts R2.2 or equivalent), laid between ceiling joists or compressed over purlins (can be combined with integral waterproof membrane).</p>

Outer Walls

OPTIONS	DESCRIPTION OF CONSTRUCTION
1	<p>CONSTRUCTION</p> <p>Conventional timber stud-framed walls.</p> <p>EXTERNAL CLADDING</p> <p>Not less than 18mm thick timber weather board; or</p> <p>Not less than 9mm thick compressed fibre cement sheets; or</p> <p>Not less than 18mm thick solid plaster.</p> <p>INTERNAL LINING</p> <p>Not less than two 12.5mm thick plasterboard sheets as internal lining to external walls.</p> <p>CAVITY INSULATION</p> <p>Fibre insulation batt or blanket with a thickness of not less than 94mm and density of not less than 12 kg/m³ (such as Wall Pink Batts R2.2 or equivalent).</p>
2	<p>CONSTRUCTION</p> <p>Conventional brick veneer in which the wall space is ventilated by connection with subfloor vents; upper part of the internal wall sheeting is exposed to, and penetrated by, upper wall vents leading to the eaves space.</p> <p>INTERNAL LINING</p> <p>Not less than 12.5mm thick plasterboard.</p>

Outer Windows

OPTIONS	DESCRIPTION OF CONSTRUCTION
1	<p>CONSTRUCTION</p>

	<p>Completely sealed double glass windows in separate timber frames with not less than a 100mm air space between panes, and a positive sealing arrangement. No through-frame ventilation.</p> <p>AREA</p> <p>Up to 20% of the total exterior wall area.</p> <p>GLAZING</p> <p>Each sheet of dissimilar thickness but neither being less than 5mm thick.</p>
2	<p>CONSTRUCTION</p> <p>Completely sealed double glass windows in separate timber frames with not less than a 50mm air space between panes, and a positive sealing arrangement. No through-frame ventilation.</p> <p>AREA</p> <p>Up to 20% of the total exterior wall area.</p> <p>GLAZING</p> <p>One sheet 7 mm Hush Glass and one sheet 6mm thick.</p>

Outer Doors

No “single” door or ranch-slider located directly between the *Schedule R* sound-insulated room and outside area is deemed to provide 30 decibels sound reduction of outside aircraft noise.

Flooring (exposed to outside noise via under-floor)

OPTIONS	DESCRIPTION OF CONSTRUCTION
1	<p>CONSTRUCTION</p> <p>Conventional timber joist floor.</p> <p>UPPER BOARDS (floor base inside room)</p> <p>Not less than two sheets of 18mm particle board.</p> <p>UNDER JOISTS (sub floor)</p>

	<p>Not less than one sheet of 6mm thick compressed fibre cement sheets.</p> <p>FLOOR CAVITY INSULATION</p> <p>Fibre insulation batt or blanket with a thickness of not less than 94mm and density of not less than 12 kg/m³ (such as Ceiling Pink Batts R2.2 or equivalent).</p>
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Notes:

The required degree of insulation will only be provided if the specified level of integrity is maintained throughout the envelope of the *building* in respect to areas in which sound insulation requirements apply. If a *sound transmission path* is provided from outside the *building* to inside the insulated room in question via a path that is not fully and appropriately insulated against, then the design of the *building* shall not comply with the permitted activity performance standard. In determining the insulating performance of roof/ceiling arrangements, roof spaces are assumed to have no more than the casual ventilation typical of the jointing capping and guttering details used in normal construction.

Mechanical Ventilation of spaces with non-opening windows or with sound-insulated windows shall be provided in accordance with provisions of the New Zealand Building Code G4 in a manner which does not compromise sound insulation.

In all cases opening windows are permissible. Where non-opening windows are used, an early warning smoke detection system should be installed and maintained within the premises (particularly in sleeping rooms and exit ways) in accordance with an approved New Zealand Code or Standard or AS3786:1993. Where mechanical ventilation is provided devices should be installed to shut down or close off the system to prevent the travel of fire and smoke products.

NOISE-APP1 – Air Noise Control Areas: Palmerston North Airport

Refer Rules: GRUZ-MD3, NH-MD4, GEN-AC1 to GEN-AC25, NH-R21, GRUZ-ST12, SUB-ST17-SUB-ST27

