



PROPOSED PLAN CHANGE

FLYGERS LINE

For

Flygers Investment Group Limited

N2620 – Draft D1

17 August 2020

ACOUSAPE CONSULTING & ENGINEERING LTD

A handwritten signature in black ink, appearing to read "Nigel Lloyd". The signature is fluid and cursive, with the first name "Nigel" and last name "Lloyd" clearly distinguishable.

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CONTENTS

1.	Introduction	1
2.	Description of Area and Identifying Noise Issues.....	1
3.	The Proposed Plan Change.....	1
4.	District Plan – Noise Rules	2
5.	Other Zone Interfaces	3
6.	Race Training Zone Interface	Error! Bookmark not defined.
7.	Rural Activities in the Kakatangiata Urban Growth Area.....	Error! Bookmark not defined.
8.	Pioneer Highway.....	Error! Bookmark not defined.
9.	Main North Island Trunk Railway Line	Error! Bookmark not defined.
10.	The Proposed Ring Road	Error! Bookmark not defined.
11.	Kartsport Manawatu.....	Error! Bookmark not defined.
12.	Awapuni Resource Recovery Park	Error! Bookmark not defined.
13.	JB Ware Shirriffs Road Truck Depot...	Error! Bookmark not defined.
14.	Soundscapes.....	Error! Bookmark not defined.
15.	Construction Noise	Error! Bookmark not defined.
16.	Conclusions	5

1. Introduction

The Flygers Line District Plan Change provides for a Residential Zone to the north of Palmerston North City. The brief is to research requirements with respect to noise mitigation for the proposal and to prepare a suitable report on the noise effects. This report will be used to compliment and inform the Section 32 analysis report

This report recommends the application of the Residential Zone noise limits to the Plan Change Area and considers the reverse sensitivity impacts of the noise of State Highway 3. Reverse sensitivity impacts occur where essential infrastructure exists that might be curtailed in some way by the development of noise sensitive activities.

There are no District Plan requirements for set backs from local roads and no separate assessment is made of traffic noise on Flygers Line.

2. Description of Area and Identifying Noise Issues

The extent of the proposed Plan Change Area is shown by the red line in Figure 1.

The land is currently a greenfield site with SH3 at the eastern end and Flygers line forming the northern boundary. The site is rural in character and would support farming activities.



Figure 1. Extent of Plan Change Area (red line)

3. District Plan – Noise Rules

The Plan Change Area is zoned Rural. The southern boundary is with Residential Zone dwellings on Meadowbrook Drive and Benmore Avenue, and the western boundary and land to the north is zoned Rural.

There is land zoned Industrial which is further to the south, but this is on the opposite side of the existing Meadowbrook Drive Residential Zone. On that basis the Plan Change will not have any further reverse sensitivity impacts on any activities in the Industrial Zone.

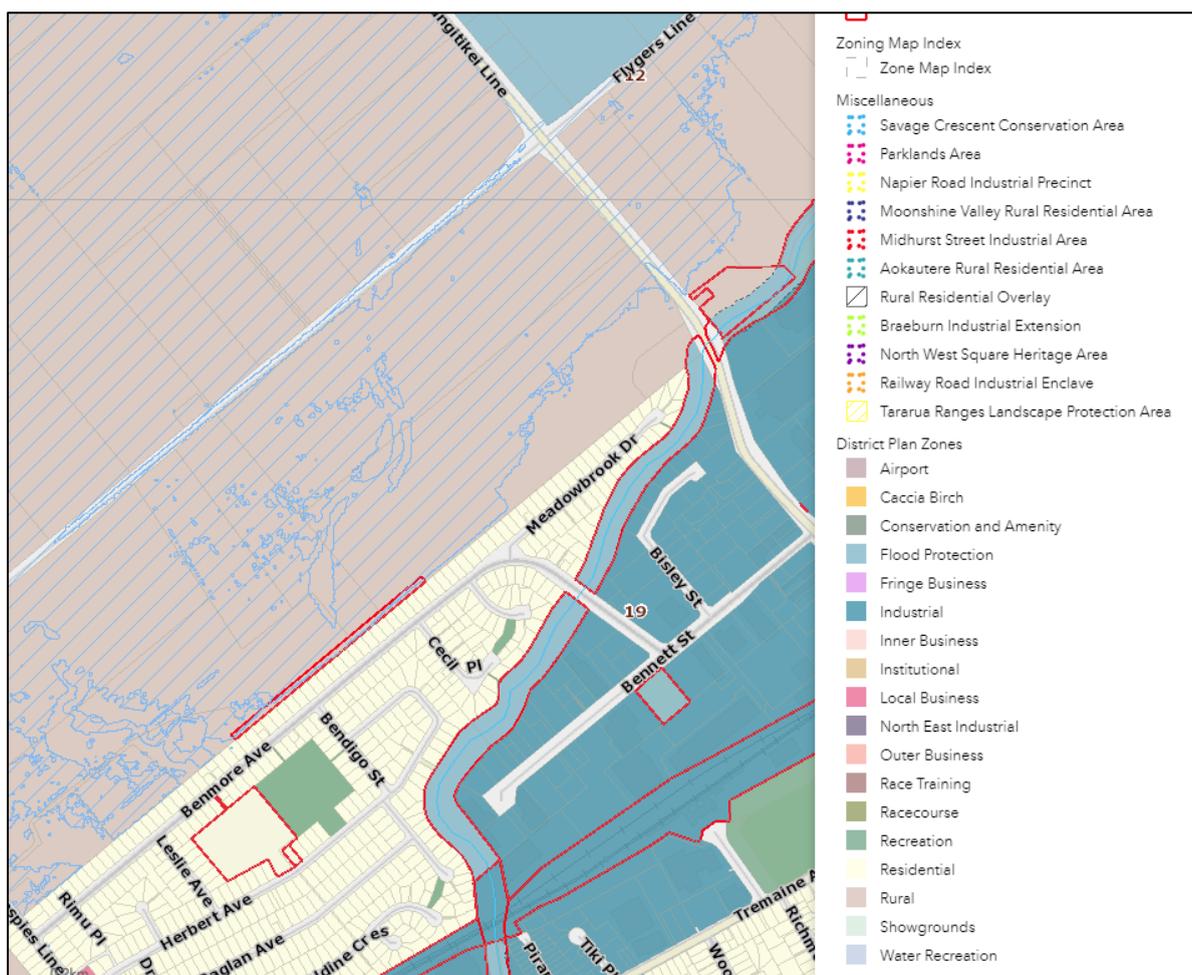


Figure 2. Current Zoning of Flygers Line Plan Change Area

The Rural Zone noise rule is R9.11.1 as follows:

Sound emissions from any activity in the Rural Zone when measured at or within the boundary of any land zoned for residential purposes or at or within the boundary of any land in the Rural Zone (other than land from which the noise is emitted or a road) shall not exceed the following:

7.00 am to 7.00 pm	50 dB LAeq (15mins)
7.00 pm to 10.00 pm	45 dB LAeq (15 mins)
10.00 pm to 7.00 am	40 dB LAeq (15 mins)

Night-time L_{max} 10.00 pm – 7.00 am 70 dBA L_{max}

Explanation

Rural areas are in essence working environment within which there are pockets of residential activity. The rules are intended to provide for normal agricultural activities while controlling noise from a range of other activities which also exist in the rural area, e.g. home occupations. This control does not apply to specific rural activities in rural areas which should be managed by applying the Section 16 requirements of the RMA in the circumstances that they arise. Reference should be made to Section 6, Noise, for those rural activities that are excluded from the above controls and for further general information on noise.

The noise rules for non-residential activities in the Residential Zone are set out in R10.8.1 as follows:

Sound emissions from any fixed mechanical plant, or from any non-residential activity, when measured at or within the boundary of any other site (other than land from which the noise is emitted or a road) shall not exceed the following::

7.00 am to 10.00 pm	45 dB $L_{Aeq(15mins)}$
10:00 pm to 7:00 am	40 dB $L_{Aeq(15mins)}$
Night-time L_{max} 10:00 pm to 7:00 am	65 dBA L_{max}

Methods for monitoring and assessing noise are set out in Section 6.2 of the District Plan.

We consider that the noise limits and the activity statuses that are generally applied throughout the Residential Zone can be applied to the Flygers Line Plan Change Area once it becomes rezoned to Residential.

The change to the Residential Zone Rules will result in noise limits becoming 5 decibels stricter during the day and at night with no change during the evening. Certain rural activities (listed in R9.5.1 and R9.5.2) are excluded from control by the noise rules when they are in the Rural Zone as set out in R6.2.6.2 but will lose their exclusion if this changes to Residential. The activities may carry on (as existing uses) until the scale or intensity changes.

4. Other Zone Interfaces

The Residential Zone also borders many other zones in the District. There will be two new zone boundary interfaces (Rural and Residential). The District Plan does not provide for protection at these interfaces i.e. from the Residential Zone to the Rural Zones, given the lesser need for noise protection outside of the Residential Zone.

There are many interfaces between Rural and Residential zoned land and the District noise rules provide adequate protection at those interfaces.

5. Rangitikei Line (SH3)

Rangitikei (SH3) passes along the western edge of the Flygers Line Plan Change Area. The 50km/hr to 100km/hr threshold is close to the southwest corner of the Plan Change Area and, as such, the speed limit is 100km/hr on the neighbouring SH3.

The 2019 traffic flows obtained from NZTA indicate a typical traffic volume of approximately 12,844 vehicle per day. With an increase of 2.4% per year this would approximate 16,700 vpd by 2030.

Given these traffic volumes and the 100km/hour traffic speed the NZTA recommended buffer¹ is 40 metres. The calculated noise level at 40 metres is 62 dB $L_{Aeq(24\text{ hr})}$. The acceptable internal noise level is 40 dB $L_{Aeq(24\text{ hr})}$ so this requires a building (at 40 metres) to reduce the noise by 22 dB to provide an acceptable inside noise level. A noise reduction of 22 dB is normally provided by a modern dwelling with thermally double-glazed windows if those windows are kept closed.

In calculating the effects area, it is reasonable to assume that dwellings constructed more than 80 metres from the State Highway will benefit from the screening provided by buildings constructed between those dwellings and vehicles on the State Highway. On that basis we recommend that the effects area should be 80 metres from the carriageway edge. This will require dwellings constructed between the 40 metre buffer and the 80 metre effects area boundary to be noise insulated and ventilated to allow windows to be kept closed against noise should residents wish.

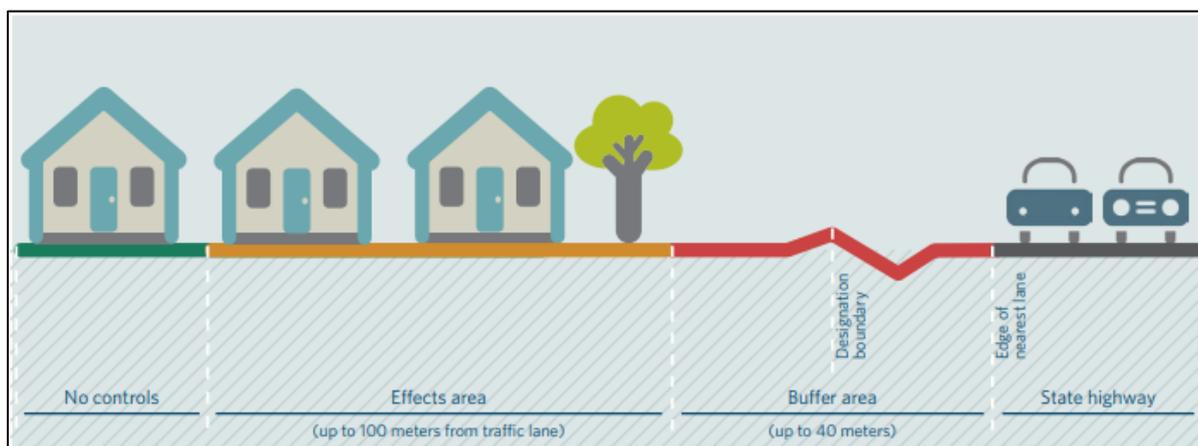


Figure 3. NZTA Recommended Buffer and Effects Area

The following noise buffer and noise insulation rule has been adopted from other rules recommended for different residential areas in Palmerston North.

Acoustic Insulation and Setbacks for the Flygers Line Residential Area

Any building (other than accessory buildings) containing a noise sensitive activity constructed within 80 metres of the nearest carriageway edge of State Highway 3 shall be designed, constructed and maintained in accordance with a design report prepared by a suitably qualified and experienced acoustical engineer stating that the design as proposed will achieve compliance with an internal noise level of 40 dB $L_{Aeq(24hr)}$ in habitable rooms.

¹ <https://www.nzta.govt.nz/assets/resources/effects-on-noise-sensitive-land/effects-on-noise-sensitive-land-use.pdf>

Provided that no such building is to be located within 40 metres of the nearest carriageway edge of State Highway 3.

The ventilation requirements of R10.6.1.5(e)(iii) shall also apply.

Rule R10.6.1.5(e)(iii) states:

Where bedrooms with openable windows are proposed in buildings requiring acoustic insulation, a positive supplementary source of fresh air ducted from outside is required at the time of fit-out. For the purposes of this requirement, a bedroom is any room intended to be used for sleeping. The supplementary source of air is to achieve a minimum of 7.5 litres per second per person.

As stated above, the noise insulation requirement is normally inherent in a well-constructed dwelling and the provision of alternative ventilation would be the only difference (with dwellings also often including mechanical ventilation in their design).

6. Conclusions

The Proposed Plan Change is for a residential area at Flygers Line to the north of Palmerston North City. This report identifies where noise issues may arise, particularly for State Highway 3 noise and considers reverse sensitivity issues.

It is recommended that the noise provisions of the Residential Zone be adopted for the Proposed Plan Change Area. This provides for the establishment of residential activity and protection of residential amenity during the transition stage (from rural to residential).

Recommendations have been made for a 40-metre set back from the SH3 carriageway edge for any dwelling and for a 80 metre effects area where dwellings will need to be appropriately noise insulated and ventilation provided. Such noise mitigation will not be onerous.