AWAKE

Transport Noise and Residential Intensification in Auckland

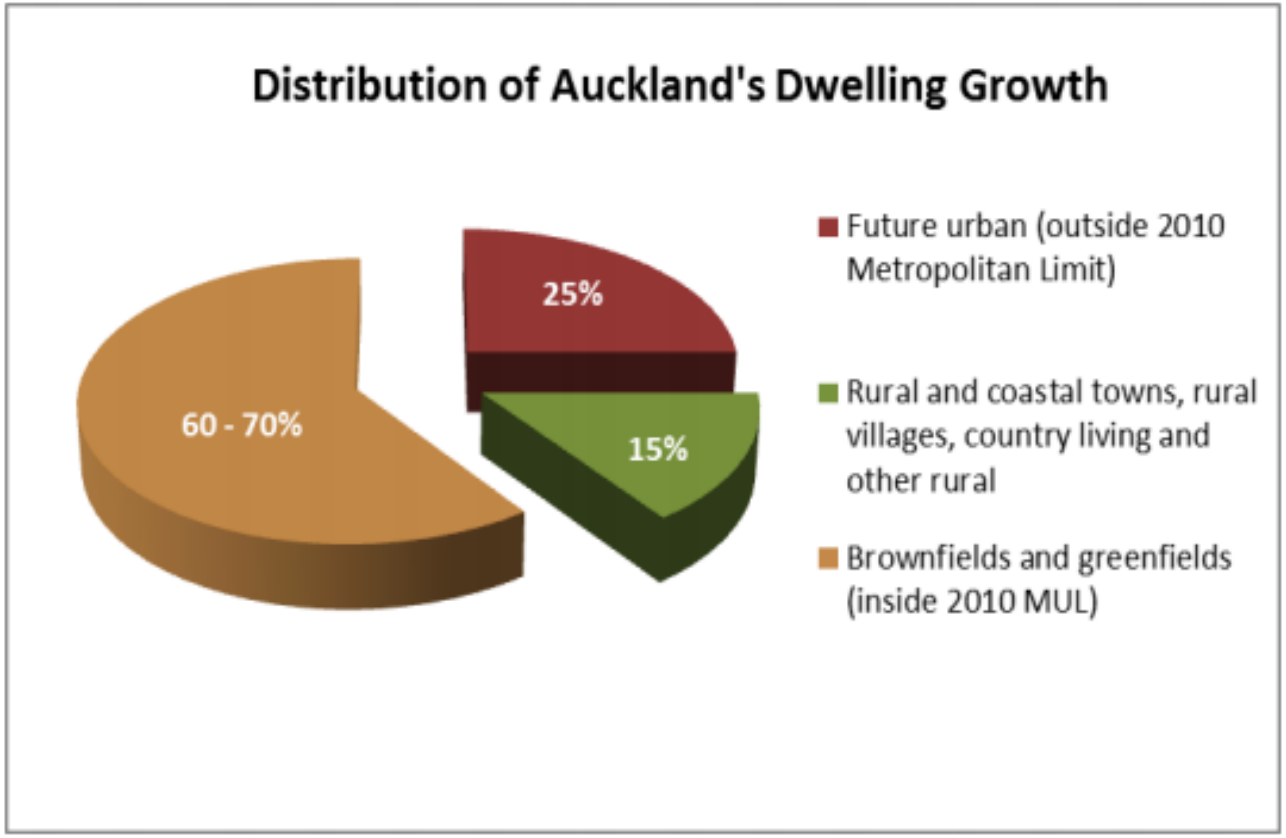
Styles Group
Acoustics & Vibration Consultants

Intensification of Auckland

- "…approximately 400,000 additional dwellings in the Auckland region by 2041 to accommodate an increase of somewhere between 700,000 to 1 million residents over that period."
- "The rate and scale of this expected growth is unprecedented for a New Zealand city."
- "…a more quality compact urban form than is currently the case with intensification focused on centres and transport nodes, and along transport corridors…."

Source: Auckland Unitar

Growth Concentrated in Urban Limits



60-70% of residential dwelling growth (270,000 new dwellings) to be provided within existing urban areas:

Source: Auckland Council's Future Urban Land Supply Strategy 2017

Planning for Growth - City Rail Link

The CRL will significantly increase access to the city centre:

Auckland's annual GDP is projected to be more than $110 million per annum higher than it would have been without the CRL (within 10 years of the CRL opening)

Planning for Growth - City Rail Link

Adverse health effects from exposure to noise

Sleep

Sleep is an **essential part of healthy life** and is recognized as a **fundamental right** under the European Convention on Human Rights

(European Court of Human Rights, 2003)

Burden of disease from Environmental Noise

"…it is estimated that DALYs lost from environmental noise are

61,000 years for ischaemic heart disease

45,000 years for cognitive impairment of children

903,000 years for sleep disturbance

22,000 years for tinnitus

654,000 years for annoyance in the European Union Member States and other western European countries."

Source: World Heath Organisation

DALY: Disability-Adjusted Life Year

Burden of disease from Environmental Noise

"These results indicate that at least one million healthy life years are lost every year from traffic related noise in the western part of Europe.

Sleep disturbance and annoyance, mostly related to road traffic noise, comprise the main burden of environmental noise."

Source: World Heath Organisation
DALY: Disability-Adjusted Life Year

Adverse Health Effects of Noise Exposure

Average indoor night time L_{Aeq}	Health effects observed in the population
Up to 9 dB ($L_{night,outside}$ up to 30dB)	Although individual sensitivities and circumstances may differ, it appears that up to this level no substantial biological effects are observed. $L_{night,outside}$ of 30 dB is equivalent to the NOEL for night noise.
9 to 19 dB ($L_{night,outside}$ 30 to 40dB)	A number of effects on sleep are observed from this range: body movements, awakening, self-reported sleep disturbance, arousals. The intensity of the effect depends on the nature of the source and the number of events. Vulnerable groups (for example children, the chronically ill and the elderly) are more susceptible. However, even in the worst cases the effects seem modest. $L_{night,outside}$ of 40 dB is equivalent to the LOAEL for night noise.

WHO Regional Office for Europe (2009). Night noise guidelines for Europe. Copenhagen.

Adverse Health Effects of Noise Exposure

Average indoor night time L_{Aeq}	Health effects observed in the population
19 to 34 dB ($L_{night,outside}$ 40 to 55dB)	Adverse health effects are observed among the exposed population. Many people have to adapt their lives to cope with the noise at night. Vulnerable groups are more severely affected.
Above 34 dB ($L_{night,outside}$ above 55dB)	The situation is considered increasingly dangerous for public health. Adverse health effects occur frequently, a sizeable proportion of the population is highly annoyed and sleep-disturbed. There is evidence that the risk of cardiovascular disease increases.

NOEL = No Observable Effects Level

LOAEL = Lowest Observable Adverse Effects Level

WHO Regional Office for Europe (2009). Night noise guidelines for Europe. Copenhagen.

Legislative Tools

High Land Transport Noise Overlay

- The proposed Auckland Unitary Plan included an overlay which would apply to land adjoining heavily trafficked roads or rail lines that have, or are likely to have over the next 10 years, traffic volumes of more than 20,000 vehicles per day or in the case of rail corridors more than 12 day time or six night time train movements.
- Proposed rules required new activities sensitive to noise and any new bedroom, sleeping area, habitable room or classroom added to existing activities sensitive to noise within the High Land Transport overlay to be designed and/or insulated, or screened by suitable barriers on the property to meet internal noise levels to meet WHO Guidelines.

Proposed Rule- Internal Noise Levels

Type of Use	Internal Noise Limits	
	Rail Noise	Road Traffic Noise
Bedrooms and Sleeping Areas	35dB $L_{Aeq(1hr)}$ between 7am and 10pm and 40dB $L_{Aeq(1hr)}$ between 10pm and 7am	40dB $L_{Aeq(24hr)}$
Other Noise Sensitive Spaces	40dB $L_{Aeq(1hr)}$ at all times	

HLTN Overlay Deleted from the AUP

Auckland Unitary Plan Hearing Panel Recommendation:

"The overlay … would apply to all new residential development. The additional controls on either the location or the cost of construction of residential and education activities would significantly affect the ability to locate those activities close to public transport to a degree that would be contrary to the Unitary Plan's objectives".

Legislation - Building Act & Resource Management Act

The Building Code/ Building Act 2004

Governs the building sector and sets out the rules for the construction, alteration, demolition and maintenance of new and existing buildings in New Zealand.

The Resource Management Act 1991

The main piece of legislation that sets out how we should manage the environment, based on the idea of the sustainable management of resources.

Requires noise effects on people to be "reasonable"

The Building Code

- Clause G6 of the Building Code regulates intertenancy noise only – between units sharing common walls and floors.

- Does not regulate the control of outdoor noise in dwellings.

The Building Code

- Clause G4 of the Building Code deals with ventilation in buildings, simply requiring a fresh air supply to be provided.

- There is no requirement to maintain a cool environment in the warmer months to enable doors and windows to remain closed to prevent the break-in of outdoor noise.

- Insufficient tool to deliver the desired planning outcome.

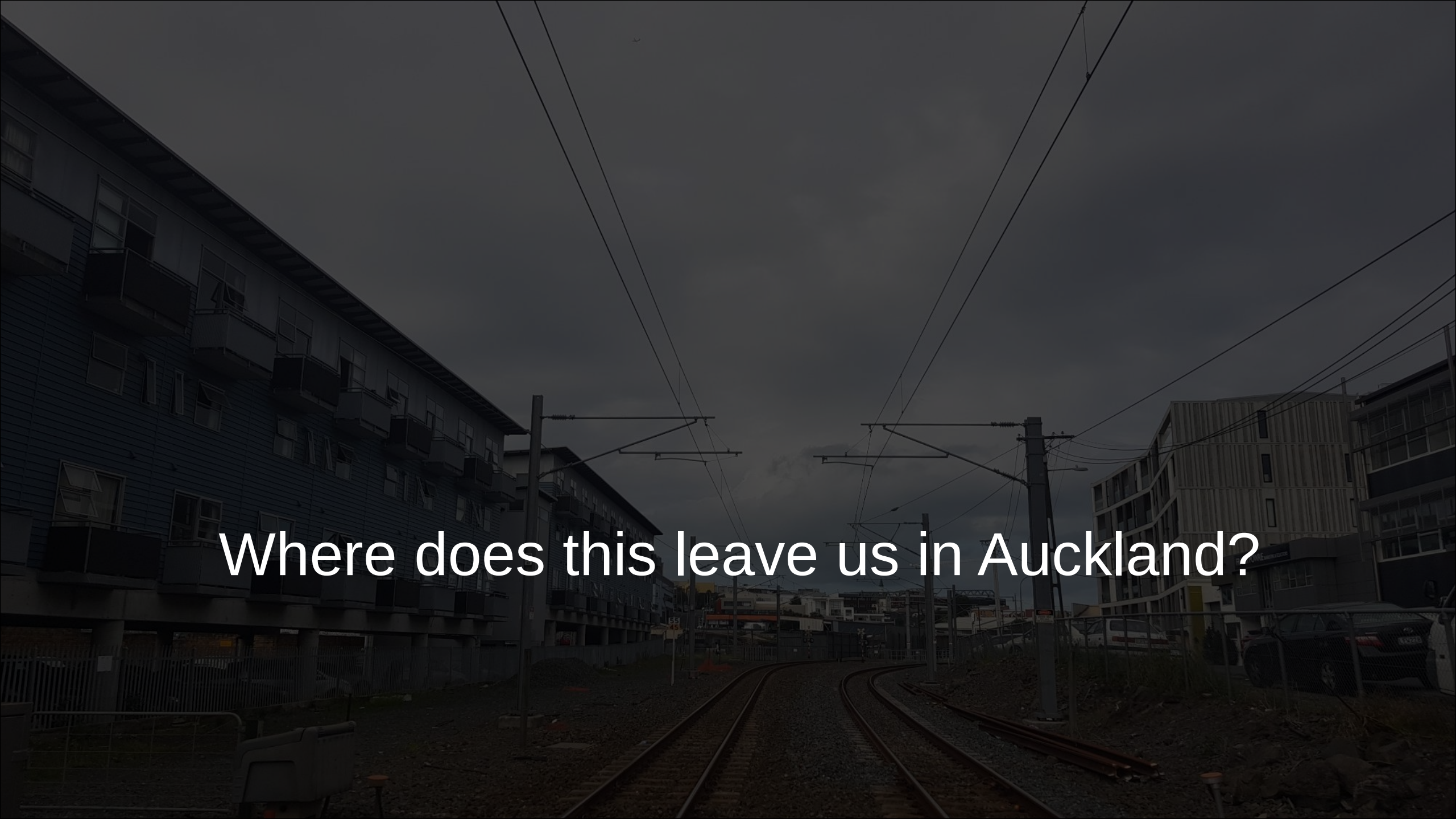
Resource Management Act

- S16 requires that noise levels are “reasonable”, where reasonable is a matter of fact and degree. Guidance can be taken from local and international standards and site-specifics

- Generally the tool used to manage the noise levels that people are exposed to

Reverse Sensitivity

- The Resource Management Act also provides indirect mechanisms to ensure that noisesensitive activities near strategic land transport infrastructure may only be established where they do not compromise or limit the existing or future operation of strategic land transport infrastructure.


Where does this leave us in Auckland?

Resource Management Act

- No direct or clear mechanism to enable the insulation of dwellings near to noisy transport infrastructure
- In many cases the process allows “discretion” to consider the effects of noise on occupants of new buildings
- Failure or refusal to insulate a new building could lead to road / rail authorities being “notified”
- They will seek insulation to ensure reverse sensitivity is managed (at the developers cost)


FRASER POWRIE
StylesGroup
Acoustics & Vibration Consultants