

23 July 2021

Wooing Tree Property Development Ltd
C/o Tattico Ltd
PO Box 91562
Victoria Street
Auckland 1142

Attention: John Duthie

Dear John

COMMENTS ON PROPOSED NOISE & VIBRATION CONDITIONS

Marshall Day Acoustics (MDA) has been engaged to provide commentary on two documents prepared by Styles Group that relate to the assessment of noise effects and potential reverse sensitivity for the Wooing Tree Development. These were the letter of 6th July 2021, and an earlier document in draft form that consisted of proposed conditions for construction noise and vibration that would apply to development of the site.

The letter of 6th July proposes conditions that are moot

Road noise

As discussed in our letter of 5th July¹, the proposed condition agreed with Waka Kotahi is satisfactory to control road noise intrusion into buildings. We agree with Styles Group that there is potential for traffic noise effects in outdoor areas. However, Styles Group estimates the closest lots have noise exposures of 62-64 dB $L_{Aeq(24hr)}$. To get noise in outdoor living areas below 55 dB $L_{Aeq(24hr)}$, the required reduction is therefore on the order of only 7 – 9 dB. This is readily achievable with a 1.8 m high fence or bund as we have recommended. Wooing Tree Property Development Limited Partnership has committed to build a 1.8m bund. In my assessment, such a bund will achieve the necessary noise attenuation for adjacent outdoor residential spaces. A 2.5-3.0 m high bund, as proposed by Styles Group, would be excessive.

We note that the current typically applied standard to avoid reverse sensitivity near State Highways is 57 dB $L_{Aeq(24hr)}$.

Frost fans (horticultural noise)

As per our letter of the 5th, addressing road noise intrusion into dwellings also more than adequately addresses frost fan noise, thus rendering any additional sound insulation condition moot. We have not identified any frost fans that would be made non-compliant by Wooing Tree. Regardless of any specific conditions related to horticultural noise being applied, it remains a requirement that the design of dwellings in the Wooing Tree development comply with all relevant provisions of the District Plan.

We agree with Styles Group that setting an expectation of the noise environment amongst potential purchasers of dwellings at Wooing Tree is important. We are not convinced that a no complaint covenant is the best way to achieve that for the reasons Styles Group outlines. Whether a LIM note or disclosure in the Sale & Purchase documents would be better we leave to others to determine.

The construction noise and vibration conditions are generally verbose and complex

The Styles Group proposed draft conditions are attached for reference.

¹ Lt 001 20210697

The intended outcome of conditions (1) and (2) are essentially appropriate. However, in our view the conditions are verbose, have much of irrelevance in them, and as a result we do not believe they read as good, clear, conditions. Condition (1) references the CNVMP but comes before condition (2) which establishes the CNVMP and its content. These two should be swapped to 'read' better.

Condition (1) also references vibration limits in condition (X), but no condition (X) is listed. This is perhaps a reference to condition (5).

Condition (3) references District Plan rule 12.7.4 (should be 12.7.4 (ii)). This Rule references the draft version of the construction noise standard NZS 6803P:1984. The final version is NZS 6803:1999, which has been adopted by most Districts and is regarded as best practice. We would amend condition 3 to reference the up-to-date standard.

We also note that under condition (3) as worded, Wooing Tree cannot breach either the working hours in that District Plan rule, or the noise levels in Tables 2 or 3 of the Standard without obtaining a separate consent. In a large civil works construction programme, there may be times when that might be required, unless the developer and contractor are very confident of their timing and methodology. Using 6803:1999 would give greater flexibility around the process to manage what might be a single or very small number/duration of exceedances – as opposed to a resource consent process. This flexible process would still require engagement with neighbours and Council and provision of acceptable noise limits or mitigation.

Condition (4) applies hours of work that are more restrictive than the District Plan rule, itself more restrictive than NZS 6803 as noted above.

Condition (1) specifies that monitoring is to be conducted in accordance with DIN 4150-3:1999, but condition (5) lists vibration criteria for occupied buildings that are not taken from 4150-3, without reference to any other applicable Standard. It is possible that the proposed night-time limit of 0.3 mm/s comes from BS 5228-2:2009 although other Standards are also a possibility. BS 5228 notes the 0.3 mm/s criteria as being "vibration might be just perceptible in residential environments". This (imperceptibility during construction) appears to be an overly conservative limit.

Conditions (6) through (10) relate to pre and post condition inspections. We support doing pre-construction condition checks as these benefit all parties. We would expect post-construction condition checks only in the event of a homeowner lodging a claim.

We feel the readability and utility of the conditions would be improved through both re-ordering and simplifying the conditions. Our preferred order would be:

- Noise and vibration limits, measurement, and assessment criteria.
- Provision and content of a CNVMP.
- Provision for engagement of expert advice related to monitoring of noise and vibration.
- Provision for building condition checks.

Proposed noise and vibration monitoring conditions

We have provided an alternative, simplified, set of conditions below for your consideration.

Condition 1

Construction noise shall be measured and assessed in accordance with NZS 6803:1999. The applicable limits in Tables 2 & 3 of the Standard shall apply.

Condition 2

Construction vibration must be measured in accordance with ISO 4866:2010 *Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures*. The Category A construction vibration criteria in the table below must be complied with as far as practicable. If measured or predicted vibration from construction activities exceeds the Category A criteria,

a suitably qualified person must assess and manage construction vibration during those activities. If measured or predicted vibration from construction activities exceeds the Category B criteria, those activities must only proceed if effects on affected buildings are assessed, monitored, and mitigated by suitably qualified people.

Construction Vibration Criteria			
Receiver	Details	Category A	Category B
Occupied dwellings	Night-time 2000h - 0630h	0.3mm/s ppv	1mm/s ppv
	Daytime 0630h - 2000h	1mm/s ppv	5mm/s ppv
Other occupied Buildings	Daytime 0630h - 2000h	2mm/s ppv	5mm/s ppv
All other buildings	Vibration - transient	5mm/s ppv	BS 5228-2* Table B2
	Vibration - continuous		BS 5228-2* 50% of table B2 values

*BS 5228-2:2009 'Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration'

Condition 3

Prior to the commencement of works on site, the consent holder shall submit to Council’s monitoring team for certification a Construction Noise and Vibration Management Plan (CNVMP). The CNVMP must reflect the guidance provided by Annexure E of NZS6803:1999 and vibration limits set out in this consent.

The CNVMP is to provide a framework for the development and implementation of measures to avoid, remedy or mitigate adverse construction noise and vibration effects, and to minimise any exceedance of the criteria set out in Condition 2.

If measured or predicted noise and vibration from a construction activity exceeds the criteria in Conditions 1 or 2, a Schedule to the CNVMP for that activity must be prepared and provided to Council at least five working days, where practicable, in advance of the activity proceeding. The schedule must establish the best practicable option for noise or vibration mitigation to be implemented for the construction activity.

Condition 4

Prior to commencement of works onsite, and subject to the consent of landowners, the Consent Holder is to carry out a building condition survey of the immediately adjacent properties to the Site and provide these to the [Monitoring Officer] at Council on request. The purpose of this survey is to record any existing cracks, defects or subsidence in neighbouring buildings prior to any earthworks or construction occurring on application site.

Yours faithfully

MARSHALL DAY ACOUSTICS LTD



Rob Hay
Associate