

Before the Hearings Commissioners at Christchurch City Council

under: the Resource Management Act 1991

in the matter of: an application by Ryman Healthcare Limited for resource consent to establish and operate a comprehensive care retirement village at 100-104 Park Terrace and 20 Dorset Street, and 78 Park Terrace, Christchurch

between: **Ryman Healthcare Limited**
Applicant

and: **Christchurch City Council**
Consent Authority

Summary of evidence of **Siiri Wilkening** on behalf of Ryman Healthcare Limited

Dated: 27 January 2021

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SUMMARY OF EVIDENCE OF SIIRI WILKENING ON BEHALF OF RYMAN HEALTHCARE LIMITED

- 1 My full name is Siiri Wilkening. My qualifications and experience are set out in my statement of evidence dated 6 January 2021. I repeat the code of conduct statement contained in my statement of evidence.
- 2 I have two corrections to make to my evidence. The first correction is a typo in paragraph 35 of my evidence, where the referenced paragraphs should be paragraphs 54 to 58.
- 3 The other correction relates to paragraph 110 of my evidence, where I report a noise level of 77 dB L_{Aeq} for 18 Salisbury Street. This level is incorrect as it does not take account my recommended barriers and baffles for piling works, and relates to the façades of the dwellings facing the Site, which do not have windows. The correct noise levels for the dwelling façades with windows, which are also depicted in the figure in Appendix A of my evidence, are 68 dB L_{Aeq} for the dwelling closest to Salisbury Street, and 69 dB L_{Aeq} for the dwelling to the back of the property at 18 Salisbury Street. I predict that the Christchurch District Plan (*District Plan*) construction noise limits can be complied with at 18 Salisbury Street at all times, including for piling works.

Summary of evidence

- 4 There are no noise and vibration issues in dispute between myself and the Council's environmental health officer, Ms Isobel Stout. This summary statement therefore sets out a brief summary of my evidence.
- 5 I have predicted the noise and vibration levels that will be produced from the construction of the Proposed Village based on information provided by Ryman's construction team.
- 6 My assessment included preparing a computer noise model, which utilises the prediction methods of ISO9613, for the two construction activities generating the highest noise: piling and excavation. I have predicted construction vibration levels based on vibration surveys previously undertaken by MDA.
- 7 I have compared the noise and vibration levels to:
 - 7.1 The construction noise standards in the District Plan; and
 - 7.2 The vibration limits in DIN 4150-3:1999 "Structural Vibration – Part 3: Effects of Vibration on Structures", which are not in the District Plan, but in my view are appropriate limits for this scenario.
- 8 I have recommended the use of perimeter and movable site barriers where effective, and the use of low noise construction

methodologies such as drilled piling rather than vibratory or impact piling.

- 9 I predict that construction vibration can comply with what I consider are acceptable vibration limits at all times, and that vibration levels will be low throughout the construction duration.
- 10 Construction noise can, for nearly all works, comply with the relevant limits. Piling has the potential to exceed those limits for brief periods, when it occurs in close proximity to multi storey neighbouring buildings that cannot be shielded by barriers. Such exceedances would occur for only a few days for each building as construction of the piles moves along the perimeter.
- 11 I consider the construction noise effects can be managed in accordance with the best practicable option through preparation and implementation of a Construction Noise and Vibration Management Plan (*CNVMP*). The *CNVMP* will include details regarding communication with affected neighbours, survey requirements, and specify best practicable option mitigation and management measures in addition to general site measures. This approach is best practice and universally adopted around New Zealand for similar environments and developments.
- 12 I have assessed operational noise from the Site in relation to site traffic and mechanical plant. I predict that operational noise levels from the Site can comply with the relevant District Plan limits at all times.
- 13 I have reviewed the submissions received in relation to noise and vibration. My assessment and recommended mitigation and management generally respond to all matters raised by submitters.
- 14 Overall, I consider that, with appropriate management and design as recommended in my evidence, the Site can be constructed and operated within reasonable noise and vibration levels.

Response to submitter evidence

- 15 I also respond briefly to:
 - 15.1 The evidence of Mr Ethan Archer on behalf of the residents of 76 Park Terrace and 18 Salisbury Street; and
 - 15.2 The evidence of Ms Mary Clay on behalf of Centro Roydvale Ltd.
- 16 At paragraph 86, Mr Archer states that he is "*not convinced*" that my recommended mitigation would result in compliant piling noise levels "*at the boundaries*" of 76 Park Terrace and 18 Salisbury Street. The relevant assessment position for construction noise is 1 metre from the most exposed façade that contains a window, not

the property boundary. While I have identified a brief non-compliance with the 70 dB L_{Aeq} noise limit at 76 Park Terrace in my evidence, I predict compliance at all times at 18 Salisbury Street. The combination of boundary barrier, baffles around the diesel engine of the drill rig and the fact that the drill rig engine will be facing away from the closest boundary while piling, contribute to reducing piling noise levels as far as practicable. Based on my observation of, and experience with, piling operations and their mitigation at a large number of construction sites, I confirm my predicted noise levels as set out in my evidence in paragraphs 45, 46 and 48, and as shown in Appendix A.

- 17 At paragraph 87, Mr Archer states that the piling methodology appears to require a hydraulic motor on top of the digger boom. His implication is that there will be a material noise source that I have not addressed in my evidence. Drilled piling uses a number of hydraulic systems. However, these are driven by the rig's diesel engine rather than by individual small motors. I have measured and observed these setups on many construction sites where piling rigs are used. I confirm that the controlling noise source during a drilled piling operation is the diesel engine noise, which I have assessed.
- 18 Appendix B of Mr Archer's evidence contains comments from his clients residing at 76 Park Terrace and 18 Salisbury Street.
- 19 Mr Waddy of 18 Salisbury Street comments that construction noise and vibration effects will particularly affect those residents working from home due to the long construction duration. As noted in my evidence (paragraphs 60 to 63), while construction noise is assessed 1 metre from an exposed façade, the effects relate to noise inside a building. Therefore, based on the external noise levels predicted for 18 Salisbury Street, internal noise levels at the most affected units are predicted to be between 45 and 50 dB L_{Aeq} . Such daytime noise levels would not interfere with work inside these dwellings. In any event, the highest noise levels are predicted to occur for around 4 days only, when the piling rig is in close proximity, with lower noise levels for the remainder of the construction.
- 20 Mr and Mrs Worthington of 76 Park Terrace comment that they experienced noticeable vibration during the demolition on the Peterborough Site. While I was not involved with these works, I note that demolition can cause higher vibration levels than construction due to the nature of the works. The use of concrete breakers for the removal of concrete slabs or breaking up of concrete elements, and large equipment tracking across the site, would cause higher vibration levels than bored piling. As noted in my evidence (paragraphs 66 and 67), bored piling causes little vibration, and vibration from excavation behind an uninterrupted pile wall would be well mitigated. Therefore, while vibration may be perceptible from time to time (as would be expected from a

large construction site), I anticipate levels of up to 1 mm/s PPV (paragraph 68 of my evidence), and that levels would generally be lower than experienced by the Worthington's during demolition works.

Response to Ms Clay

- 21 At paragraphs 69 and 70 of her evidence, Ms Clay notes her client's concern with noise from the rubbish truck and other service vehicles and seeks a restriction to rubbish truck operation to between 7.30am and 10pm. As noted in my evidence (paragraphs 94 to 96), I predict that the infrequent use of the driveway by a rubbish truck will readily comply with the relevant noise limits (both day and night-time). However, to further avoid adverse effects on neighbouring buildings, I have recommended that refuse collection only occur during the daytime hours (7am – 11pm) set out in the District Plan. I do not consider a further restriction to my additional recommended management measures necessary.

Siiri Wilkening
27 January 2021