

Before an Independent Commissioner appointed by the Ashburton District Council

In the matter of the Resource Management Act 1991 (**the Act**)

And

In the matter of an application for resource consent under section 88 of the
Act

And

In the matter of Land use consent and variation of resource consent for the
relocation of air conditioning equipment at the Ashburton
Museum Art Gallery and Museum at 329 West Street,
Ashburton.

Brief of evidence of Jon Farren

Dated: 30 September 2025

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Qualifications and experience

- 1 My name is Jon Farren.
- 2 I am the Manager and Principal of the Christchurch office of Marshall Day Acoustics (MDA).
- 3 I hold a Bachelor of Engineering with Honours in Electroacoustics from the University of Salford in the United Kingdom. I hold full Membership of the Institute of Acoustics (UK), a requirement of membership being that I am active in the field of professional acoustics and satisfy the Institute's requirements with regard to level of qualifications and experience.
- 4 I have been employed as an Acoustic Consultant for over 30 years, approximately 25 of which have been with Marshall Day Acoustics (MDA). I have considerable experience in the areas of planning with regard to noise, the assessment of noise and vibration, and noise control in relation to both environmental noise and building acoustics.
- 5 Of specific relevance to this proposal, I have assessed noise effects and performed compliance monitoring at in excess of 100 sites across New Zealand where mechanical services equipment is a noise source under consideration.
- 6 My role in relation to the Ashburton Art Gallery and Museum application (**Application**) has been to provide advice in relation to noise. I am the technical reviewer and supervisor for all noise monitoring, modelling and analysis. Working with my colleagues, I was responsible for reviewing and providing input to the July 2024 Assessment of Noise Effects (**Noise Assessment**) that accompanied the Application and the s92 RFI response dated 27 August 2025.
- 7 Prior to the preparation of that report, I was engaged by Ashburton District Council in 2020 to peer review the acoustical design of the Art Gallery mechanical plant (prepared by Powell Fenwick Consultants). I was engaged again in 2021 to develop proposed consent conditions to provide assurance to neighbouring residents regarding noise monitoring for the new equipment, and a protocol for addressing any non-compliance.
- 8 In preparing this statement of evidence I have considered the following documents:
 - (a) the Assessment of Effects on the Environment (**AEE**) that accompanied the Application;
 - (b) submissions relevant to my area of expertise; and

(c) the section 42A report prepared by Mr Nick Boyes.

9 I have visited the site and am familiar with the plant and surrounding area.

Code of Conduct for Expert Witnesses

10 In preparing my evidence I have reviewed and agree to comply with the Code of Conduct for Expert Witnesses contained in Part 9 of the Environment Court Practice Note 2023. This evidence has been prepared in compliance with the Practice note. I confirm that the issues addressed in this statement of evidence are within my area of expertise, except where relying on the opinion or evidence of other witnesses, which I will specify. I have not omitted to consider any material facts known to me that might alter or detract from the opinions expressed.

Scope of evidence

11 My evidence addresses the following:

- (a) The existing noise environment;
- (b) My assessment of mechanical plant noise;
- (c) The proposed noise limits and potential adverse noise effects;
- (d) Matters raised by submitters to the Application; and
- (e) Matters raised in s42A staff reports.

Executive summary

12 I consider the proposed plant compound will result in negligible change in noise effects for the adjacent residents. Mechanical plant noise levels are predicted to reduce compared with the existing situation, and will comply with the underlying Ashburton District Plan (**ADP**) permitted activity noise limits for the zone. Traffic noise is the dominant noise source experienced by residents at levels that are substantially above the permitted activity standards during both the day and night.

13 The assessment of noise from different sources is complex. For clarity, I would like to point out that:

- (a) Only noise generated on the Art Gallery site is compared to the District Plan noise limits or Condition 28.
- (b) It is not appropriate to compare traffic noise to the District Plan limits because it is exempt. However, I discuss traffic noise to describe the

underlying environment in which the Art Gallery noise is experienced. This underlying noise environment has a bearing on the context of any adverse noise effects that arise.

- 14 My conservative assessment finds that noise from both the existing mechanical equipment and new plant in the proposed compound will comply with the most stringent ADP permitted activity night-time noise limit of 40 dB $L_{Aeq(1hr)}$ at the nearest residential properties. Mechanical plant noise will not significantly increase in level during the day and will therefore also comply with the applicable ADP 50 dB $L_{Aeq(1hr)}$ daytime permitted activity limit.
- 15 Much of my analysis focusses on the night-time situation as this is most critical for the protection of sleep and when the most stringent noise limits apply. The ADP 40 dB L_{Aeq} night-time noise limit is 5 dB more stringent than the World Health Organisation (**WHO**) recommended night-time guideline value of 45 dB L_{Aeq} for the protection of residential sleep amenity. The limit is also 5 dB more stringent than the guideline value of 45 dB L_{Aeq} for night-time noise from New Zealand Standard NZS 6802:2008 *Acoustics - Environmental Noise*. As such, I consider that the ADP 40 dB L_{Aeq} night-time noise limit provides residents with a high degree of protection against noise disturbance at night.
- 16 Condition 28 of the 2011 Consent Order applies noise limits at the site boundary, which I understand were based on the operative ADP at that time. The most stringent noise limit of 30 dB applies at night and all day on Sundays and Public holidays. With reference to the WHO and NZS 6802 published guidance, a noise limit of 30 dB is significantly less than the guideline value of 45 dB L_{Aeq} which allows residents to sleep with windows open. With reference to this guidance, my opinion is that a 30 dB noise limit is lower than required to avoid sleep disturbance – the current 40 dB L_{Aeq} ADP permitted activity noise limit will achieve this aim and provide a higher standard of noise amenity than the guideline values in WHO and NZS 6802.
- 17 Based on my predictions I estimate that the existing mechanical plant does not comply with the Condition 28 noise limits during either the day or at night.
- 18 Both the application site and adjacent residences experience relatively high levels of traffic noise from State Highway 1 during the day and night. My measurements show traffic noise levels are generally in the high 50s dB L_{Aeq} during the day and do not drop below 47 dB L_{Aeq} at night. The average traffic noise level at night is 54 dB L_{Aeq} between 10pm and 7am. Traffic noise levels at the residential boundary are considerably louder than the ADP residential zone permitted activity noise limits of 50 and 40 dB L_{Aeq} during the day and night respectively

- 19 When considering how mechanical plant noise is received by residents in the existing ambient noise environment, there is a negligible difference in noise effect between a noise limit of 30 or 40 dB L_{Aeq} . This is because traffic noise is so much louder than either limit and always dominates the noise environment. In other words, because of the way sound energy from multiple sources adds together, there is no appreciable change in the total sound level at the residential boundary, regardless of which noise limit applies.

Project background

- 20 Noise emissions from the proposal are described in detail in the Noise Assessment that accompanied the application. Below I briefly discuss the key aspects.
- 21 The Ashburton Art Gallery and Museum is located in a Residential Zone under the Ashburton District Plan. State Highway 1 is located to the east and the Art Gallery shares its western boundary with two residential dwellings.
- 22 There are two existing mechanical plant areas, broadly to the north and south on the roof of the Art Gallery as indicated in Figure 1. These plant areas are elevated with respect to the adjacent residential properties. Both areas are visually and acoustically screened from the adjoining residential properties.
- 23 The adjacent residential dwellings – 127 Cameron Street and 130 Wills Street – are both two storey. As I discuss further below, the upper floor of two storey dwellings are more susceptible to noise intrusion because of their relative height with respect to noise control barriers. For this reason, I have focused my assessment on the upper storeys.

Figure 1 - Aerial view of site, existing plant zones and proposed new plant compound location

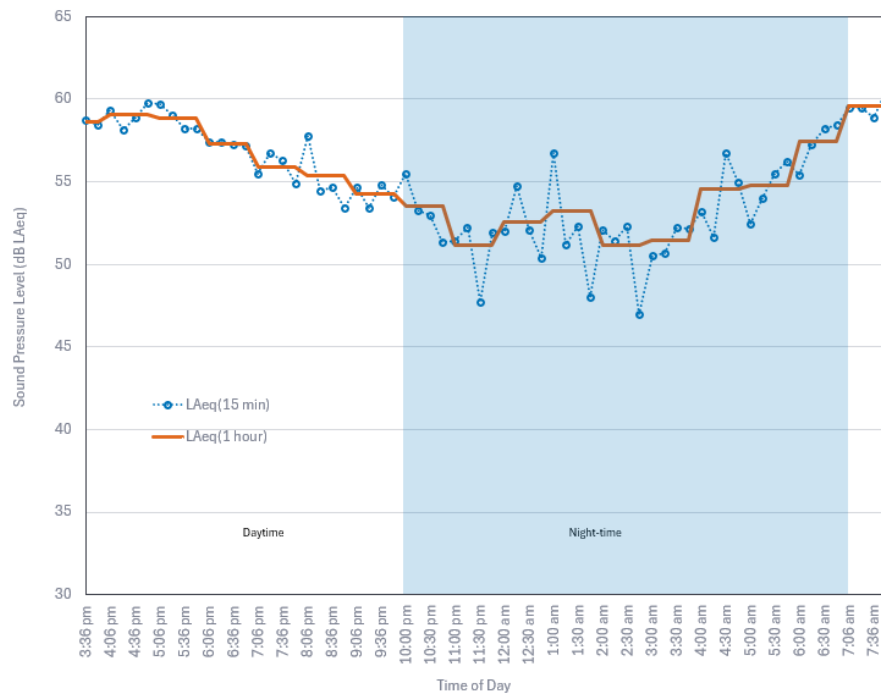


Traffic noise is a prominent noise source in the residential zone

- 24 Both the Art Gallery and adjacent dwellings receive traffic noise from State Highway 1. The NZTA website¹ estimates a traffic volume of 10,973 (AADT) a day past the site, with approximately 8% being heavy vehicles.
- 25 Figure 2 shows the variation in measured traffic noise level overnight at the residential boundary with 130 Wills Street as described in Section 4.0 of the Noise Assessment. Both the 15 minute and 1 hour average noise levels are presented, 1 hour being the time basis used in the ADP. The ADP night-time period is shaded blue.

¹ <https://nzta.maps.arcgis.com/apps/webappviewer/index.html?id=95fad5204ad243c39d84c37701f614b0>

Figure 2 Variation in noise level with time at the property boundary of 130 Wills Street



- 26 The measurements show that existing traffic noise levels are generally higher than 55 dB $L_{Aeq}(15min)$ during the day at the dwelling. Traffic noise levels reduce at night to an average of 54 dB L_{Aeq} . The lowest measured noise level was 47 dB $L_{Aeq}(15min)$ at approximately 0245hrs in the morning.
- 27 As I discuss below, the noise measurements confirm that traffic noise levels at the residential boundary are considerably above the numerical values ADP residential zone permitted activity noise limits of 50 and 40 dB L_{Aeq} during the day and night respectively.

Noise perception

- 28 I offer the following remarks to assist with interpretation of my analysis in the following sections.
- (a) Noise is assessed in decibels (dB) due to the sensitivity of the human ear;
 - (b) The decibel scale is logarithmic, so different sounds like traffic noise and equipment noise don't add together like normal (e.g. 40 dB + 40 dB does not equal 80 dB, but instead is 43 dB);
 - (c) Louder sounds tend to dominate, so adding a quieter noise often makes little noticeable difference to the total sound level; and

- (d) If the equipment is more than 10 dB quieter than the traffic noise, then the overall noise level will not change (e.g. 40 dB + 30 dB is still 40 dB).

Noise criteria and residential noise amenity

- 29 I understand that Condition 28 of the 2011 Consent Order² applies to current noise emissions from the Art Gallery. The most stringent noise limit is 30 dB which, broadly speaking, applies at night, and all day on Sundays and Public Holidays. I note the Consent Order does not provide a noise metric and, as the limits mirror the ADP at that time, I have assumed the metric L_{A10} is applicable. For the purposes of my discussion, I have assumed the old ' L_{A10} ' and new ' L_{Aeq} ' metrics are equivalent, which is generally appropriate for steady noise from mechanical plant. The noise limits are repeated below for reference. I note that ADP noise limits that were applicable in 2011 were updated to better reflect current best practice in the second generation plan, which became operative in 2014.

28. Noise from sources other than vehicle movements and pedestrians shall not exceed the following limits when measured at or beyond the boundary of the site:-

	2400 hrs to 0700 hrs	0700 hrs to 0900 hrs	0900 hrs to 1700 hrs	1700 hrs to 2100 hrs	2100 hrs to 2400 hrs
<i>Monday to Friday</i>	30dBA	40dBA	40dBA	40dBA	30dBA
<i>Saturday</i>	30dBA	30dBA	40dBA	30dBA	30dBA
<i>Sundays & Public Holidays</i>	30dBA	30dBA	30dBA	30dBA	30dBA

- 30 While my brief for this project was not related to assessing compliance with Condition 28, I estimate that the highest daytime noise emissions from the existing mechanical plant are in the order of 43 dB L_{Aeq} which is nominally 3 dB above the daytime limit on Mondays to Saturdays, and 13 dB above the daytime limit on Sundays.
- 31 For comparison, Rule 11.8.1 of the operative Ashburton District Plan sets out the permitted activity noise standards for a Residential zone as 50 dB $L_{Aeq(1hr)}$ during the day and 40 dB $L_{Aeq(1hr)}$ at night. Whilst the times of application differ, the consented noise limits are broadly 10 dB more stringent than the operative District Plan during the day and at night (20 dB more stringent during the day on Sundays).

² Appendix 5 of the AEE

Table 1: Ashburton District Plan noise limits

Zone	Daytime (0700-2200 inclusive)		Night-time (All other times)	
	L _{Aeq} (1hr) ³	L _{AFmax} ⁴	L _{Aeq} (1hr)	L _{AFmax}
Residential A, B, C and D	50 dB	75 dB	40 dB	65 dB

The notes to Rule 11.8.1 advise that “The daytime noise limits are intended to provide amenity for outdoor activities. Night-time noise limits are intended to allow for sleep amenity”. In other words, the most stringent 40 dB L_{Aeq}(1hr) night-time noise limit is relevant to bedrooms.

- 32 Additional guidance on noise levels is provided by the World Health Organisation⁵ and New Zealand Standard NZS 6802:2008 *Acoustics - Environmental Noise*. Both documents are broadly aligned in their guideline noise limits for the protection of human health and amenity against noise which are:

- (a) Daytime 55 dB L_{Aeq}
- (b) Night-time 45 dB L_{Aeq}.
- (c) The daytime limits are provided for the protection of outdoor amenity whereas the night-time noise limit is intended to permit residents to sleep with windows open.

- 33 With reference to the published guidance, I do not consider that the Consent Order’s 30 dB noise limit at night is required to provide an appropriate sleep environment, or to provide appropriate outdoor amenity on Sundays and public holidays. The 40 and 50 dB L_{Aeq} ADP permitted activity noise limits will achieve this aim, and provide a higher standard of noise amenity than recommended in the WHO and NZS 6802 published guidance.

- 34 My assessment of the proposed application therefore adopts the ADP permitted activity noise limits as being appropriate in this instance.

³ L_{Aeq}(t) - The equivalent continuous (time-averaged) A-weighted sound level commonly referred to as the average level. The suffix (t) represents the assessment period, e.g. (1h) represents a period of 1 hour, (15 min) would represent a period of 15 minutes.

⁴ L_{AFmax} - The A-weighted maximum noise level. The highest noise level which occurs during the assessment period

⁵ WHO Guidelines for community noise

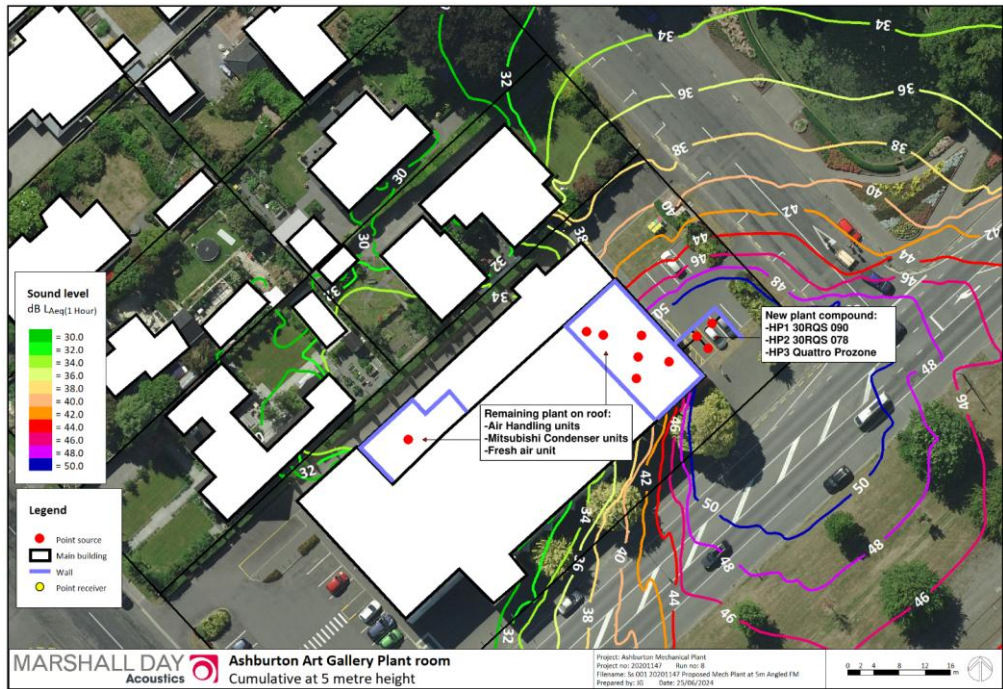
Noise from proposed mechanical plant

- 35 The Noise Assessment outlines the noise sources associated with the proposed mechanical plant compound which have been collated through obtaining manufacturer's data (for the new plant) and through measurements of the existing equipment.
- 36 In summary, heat pumps will be located in the proposed northern compound which will have a 4 metre high noise barrier on its western and northern sides. I have taken the conservative approach of predicting noise levels at the upper floors of the adjacent dwellings where the proposed noise barrier will be least effective – noise levels at the dwellings' ground level will be lower. My calculations conservatively assume that all mechanical plant will be operating at the same time. However, as I discuss in Paragraphs 45 to 47 below, I understand from the project's mechanical engineer, Mr Sam Seatter, that not all plant in the compound would be required to operate at night.
- 37 The predicted mechanical plant noise levels were set out in Table 3 and Figure 4 of the Noise Assessment and show that both the existing and proposed mechanical equipment complies with the most stringent ADP permitted activity noise limit of 40 dB L_{Aeq}. To be clear, the presented data is only for the mechanical equipment and does not include the existing traffic noise levels which are much higher.

Table 3: Predicted noise levels from the proposed mechanical plant configuration at adjacent receivers at 5 metres height

Assessment position	Predicted noise level dB L _{Aeq} (1 hour)	Night-time noise limit dB L _{Aeq} (1 hour)	Complies? Yes/No
130 Wills Street	38	40	Yes
127 Cameron Street	36	40	Yes

Figure 1: Noise contours from all mechanical plant at adjacent receivers at 5 metres height



38 Table 4 provides the mechanical plant noise levels, the lowest recorded traffic noise levels and the total sound level received by the residents.

Table 4: Comparison of mechanical plant noise levels with existing environment

Assessment position	Mechanical plant noise level dB LAeq(1 hour)	Lowest existing traffic noise level dB LAeq(1 hour)	Total sound level dB LAeq(1 hour)	Change in noise level
130 Wills Street	38	51	51	No Change
127 Cameron Street	36	51	51	No Change

The proposal will result in a minimal change in noise effects

39 I consider the proposed plant compound can comply with the applicable 40 dB LAeq ADP permitted activity noise limit. Compliance with this limit will result in negligible change in noise effect for the adjacent residents in the context of the existing traffic noise environment – traffic is the dominant noise source at the dwellings at all times of the day and night. The proposed limits are consistent with the ADP permitted activity noise limits for the zone allows

for a higher standard of residential noise amenity with respect to the WHO and NZS 6802 published guidance.

Matters raised by submitters

- 40 I have reviewed the joint submission to the proposal from the following submitters:
- (a) A D & E J Shearer (124 Wills Street)
 - (b) Haworth House Limited (128 Wills Street)
 - (c) D & D Sauer (130 Wills Street)
 - (d) K Smith (121 Cameron Street)
 - (e) D & N Chilton (123 Cameron Street) and
 - (f) C & M Ross (127 Cameron Street)
- 41 The submission discusses amenity, the noise assessment and traffic noise which I will address below.
- 42 Amenity is discussed in Paragraph 1(c) of the submission. To clarify, the proposal will not have any detrimental effect on noise amenity when considered in the context of the existing noise environment when compared to what is permitted by Condition 28 of the 2011 Consent Order.
- 43 Traffic noise is discussed in Paragraph 3 of the submission. As discussed in my Paragraph 25, traffic is the dominant noise source at the nearest dwellings to the site during both the day and night. I agree with the submission statement that traffic noise levels do reduce at night. However, my measurements show that traffic noise remains at an elevated level such that the proposed mechanical plant configuration will not substantially contribute to the total noise, and there will be an imperceptible change in noise level at the dwelling.
- 44 Contrary to the claim in Paragraph 5, I confirm that the two storey dwellings have been accounted for in both the Noise Assessment and my evidence. The two storey nature of dwellings has been the focus of my conservative analysis.

Evidence of Mr Sam Seatter

- 45 I have reviewed Mr Sam Seatter's evidence who is the mechanical design engineer for the project. Mr Seatter and I have also discussed the proposed design by phone.

- 46 Mr Seatter's evidence sets out his design assessment and the proposed schedule of mechanical plant to be installed. I note there have been some changes (both additions and deletions) since my noise assessment was conducted in July 2024. It is typical during a project's design phase for equipment to change as new information comes to light.
- 47 The equipment sound power levels presented in Mr Seatter's evidence are similar to or quieter than the equipment I have already assessed. Therefore, noise emissions will comply with the proposed 40 dB L_{Aeq} noise limit with the designed plant enclosure. I further understand that not all of the plant would be required to operate at night; consequently, noise levels in practice will likely be lower than my conservative predictions.

Matters raised by officer report

- 48 I have reviewed the s42A report prepared by Mr Nick Boyes. In respect of noise, Mr, Boyes has also relied on the advice of the noise peer reviewer, Mr Darran Humpheson of Tonkin and Taylor.
- 49 I agree with the conclusions reached that the impact on residential noise amenity is negligible.
- 50 I also support the recommended conditions requiring noise barriers to be installed prior to the operation of the mechanical equipment, and for post installation noise monitoring to verify compliance. This will ensure that noise effects are appropriately mitigated and align with the assumptions in my assessment.
- 51 However, I wish to highlight that the proposed noise assessment location in amended condition 28 of "*...1m from any accessible façade of neighbouring dwellings...*" is unlikely to be practical. With reference to NZS 6802:2008⁶, noise is more appropriately assessed at any point within the boundary of a residential site. This is a more conservative assessment location as it is potentially closer to the noise source and does not disadvantage the neighbours compared to the proposed wording. My proposed revised condition is:
28. Noise from sources other than vehicle movements and pedestrians shall not exceed the following limits when measured at any point within adjacent residentially zoned sites within the following timeframes:

⁶ New Zealand Standard NZS 6802:2008 *Acoustics - Environmental Noise*

Time Period	L_{Aeq}(1hr)	L_AF_{max}
Day (0700–2200)	50 dB	75 dB
Night (all other times)	40 dB	65 dB

Noise shall be measured in accordance with the provisions of NZS 6801:2008 *Acoustics – Measurement of environmental sound*, and assessed in accordance with NZS 6802:2008 *Acoustics - Environmental Noise*.

Dated: 30 September 2025

Jon Farren