Before the Independent Hearing Commissioners appointed by New Plymouth District Council

Under	the Resource Management Act 1991
In the matter of	hearing on the resource consent application by the New Plymouth Pistol Club Inc for a land use resource consent for the use of a gun range and associated facilities within the General Industrial Zone on the existing site at 228 De Havilland Drive & 1206 Devon Road (LUC24-48583)

Statement of evidence of Jeremy William Trevathan on behalf of New Plymouth Pistol Club Inc

Date: 4 May 2026

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INTRODUCTION

1 My full name is Jeremy William Trevathan. I am the Principal Acoustic Engineer and Managing Director of Acoustic Engineering Services (AES).

2 This evidence is given on behalf of New Plymouth Pistol Club Inc (**the Club**).

3 My evidence is in respect of the resource consent application by NPPC for the use of a gun range and associated facilities on the site at 228 De Havilland Drive and 1206 Devon Road, New Plymouth (LUC24-48583) (**Application**).

Qualifications and Experience

4 I hold the degrees of Bachelor of Engineering with Honours and Doctor of Philosophy in Mechanical Engineering (Acoustics) from the University of Canterbury. I am an Associate of the New Zealand Planning Institute, and a Member of the Acoustical Society of New Zealand (ASNZ). I am the AES Member Representative for the Association of Australasian Acoustical Consultants (AAAC), a judge for the Association of Consulting Engineers of New Zealand (ACE NZ) Innovate Awards, and a member of the MBIE College of Assessors. I was a member of the ASNZ working group advising the Ministry for the Environment (MfE) regarding the National Planning Standards (2019).

5 I have twenty years' experience in the field of acoustic engineering consultancy and have been involved with a large number of environmental noise assessment projects throughout New Zealand. I have previously presented evidence at Council and Environment Court Hearings, and before Boards of Inquiry. I have provided expert evidence on behalf of applicants, submitters and as a peer reviewer for Councils.

Involvement in the Application

6 I was engaged by the Applicant in November 2023 to provide acoustic engineering advice and assist the Club in applying for resource consent from New Plymouth District Council (**NPDC**).

7 I am the principal author of the Assessment of Environmental Noise Effects for the Application, with the relevant version dated 6 December 2024 (**AENE**) and draft Noise Management Plan dated 3 December 2025 (**Draft NMP**) attached as Appendix 1 to this evidence.

8 The 6 December 2024 AENE (provided as part of the RFI response lodged with the NPDC 6 December 2024) superseded an earlier AENE document dated 1 August 2024 which was attached to the Application. As described below, both Mr Ellerton and Mr Robinson have referred to the 1 August 2024 AENE in some sections of their evidence, creating some confusion. I understand that the council was advised on 6 December 2024 that the 1 August 2024 AENE had been superseded. The background to the two AENE versions is explained further below.

CODE OF CONDUCT

9 I confirm that I have read the Code of Conduct for expert witnesses contained in the 2023 Environment Court Practice Note and that I agree to comply with it. I confirm I have considered all the material facts that I am aware of that might alter or detract from the opinions I express. In particular, unless I state otherwise, this evidence is within my sphere of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

SCOPE OF EVIDENCE

10 My evidence addresses:

- Background
- Recommended approach to noise management for the Club
- Proposed mitigation
- Expected noise levels
- The Club as established in 1983
- Submissions
- Section 42A report
- Conclusions

11 In preparing my evidence I have considered the following:

- The application for resource consent including the AEE, all attachments and technical reports

- Submissions on the Application

- Section 42A Report

- The expert evidence filed on behalf of the Club.

BACKGROUND

12 The Club is located at 1220 Devon Road (State Highway 3) and is situated approximately 150 metres west of the closest neighbouring dwelling – the 'secondary dwelling' associated with 1222 Devon Road.

13 The site is within the General Industrial Zone in the New Plymouth Part Operative District Plan (**NPPODP**). The land to the east of the site is zoned Rural Production Zone, and the land to the north across Devon Road is zoned Future Urban Zone. The other land surrounding the site is also within the General Industrial Zone.

14 The Club has historically been used by members for recreation, training for competitions, and for competitions. I understand that regular shooting events have historically been scheduled on Wednesday mornings, Thursday evenings, and Sundays. The Club is also used by schools, other shooting clubs, and open days for public or corporate events. The New Zealand Police and the Armed Offenders Squad also use the Club for training and certification.

15 The Club currently has eight outdoor ranges and one indoor range, each of which is used for a variety of shooting disciplines. 'Range 1' is closest to the 1222 Devon Road dwellings, with other ranges progressively further away to the west.

16 As outlined in the updated draft Conditions attached to the evidence of Mr Edwards, key constraints on the proposed activity from a noise perspective include:

- A noise limit of CNR 90 is proposed, with respect to all current and future residential receivers. This has been the consistent position since my 6 December 2024 updated AENE, which was provided with the 6 December 2024 RFI response. I consider this is within the scope of the original application because the revised AENE does not increase the noise levels sought in the original application. The draft Noise Management Plan (**NMP**) dated 3 December 2025 and the draft Conditions circulated to the Council by Mr Edwards 2 February 2026 were also written on this basis.

- Shooting will be restricted to between 0900 and 2100 hours Monday to Saturday, and 0900 to 1700 hours Sunday. In addition, there will be periods of low noise 1200 to 1500 hours Monday to Friday, and 1700 to 2100 hours Saturday. For the purpose of the 'low noise' hours, every firearm to be used at the Club will have its noise emissions measured and be certified as 'low noise' (generating 55 dB LAFmax at the notional boundary of the 1222 Devon Road dwellings) or otherwise.

- Some exceptions will be provided for police use and limited major competitions.

17 A NMP will set out how the CNR 90 will be met. The NMP will include a requirement that the number of rounds discharged per day Monday to Saturday will not exceed 2,700. This will provide a high level of certainty that the CNR 90 requirement will be achieved. On Sundays, the number of rounds discharged will be higher, with CNR achievement regulated by gun types, structured shooting and ranges used (Sundays are internal Club competition days with a high level of prescription as to use of the ranges, so the CNR can be proactively managed).

RECOMMENDED APPROACH TO NOISE MANAGEMENT FOR THE CLUB

18 I have considered a number of matters in developing a recommended approach to noise management for the Club, as summarised below.

NPPODP

19 The underlying District Plan limits would often be a key point of reference in a Resource Consent noise assessment. For noise generated in a General Industrial Zone and received at the notional boundary of dwellings in the Rural Production Zone or at any Future Urban Zone site, the NPPODP noise limits are 55 dB LAeq(15min) between 0700 and 1900 hours, 50 dB LAeq(15min) between 1900 and 2200 hours, and 45 dB LAeq(15min) / 75 dB LAFmax between 2200 and 0700 hours. With respect to these limits, the NPPODP states that noise shall be measured in accordance with NZS 6801:2008 *Acoustics - Measurement of Environmental Sound* and assessed in accordance with NZS 6802:2008 *Acoustics - Environmental Noise*. The noise chapter of the plan states that "*The noise rules and effects standards do not apply to the noise generated by the following activities… … 10. Impulsive sounds (such as blasting and bangs) and dog barking noise*". The Plan also states "*Some activities are exempt from the noise rules set out in this section as they are either not controlled by the Act, e.g. aircraft in flight, or are controlled separately by sections 16 and 17 of the Act and by the application of relevant New*

Zealand Noise Standards." I have been advised by Mr Edwards, who has reviewed some of the section 32 background to the NPPODP noise chapter, that the reference to 'impulsive' sounds is not intended to capture gunshot noise (that exclusion is not intended to capture a repeated activity such as from firearm discharge) and section 16 is considered an enforcement backstop, not a substitute for plan controls.

20 As stated in the next section of my evidence, the discharge of firearms is not provided for in the relevant standard NZS6802:2008 *Assessment of Environmental Noise.* Notwithstanding, the general LAeq limits outlined in the Plan are lenient – as examples of daytime limits higher than 55 dB LAeq(15min) and night time limits higher than 45 dB LAeq(15min) for equivalent zones are reasonably rare. The NPPODP therefore does not seek to provide an unusually high level of acoustic amenity for dwellings in Rural Production or Future Urban zones.

NZS 6802:2008 Acoustics - Environmental Noise

21 NZS 6802:2008 Acoustics – Environmental Noise outlines a guideline daytime limit of 55 dB LAeq(15 min) for the "*reasonable protection of health and amenity associated with the use of land for residential purposes*", however, noise from gunfire is explicitly excluded from the scope of the Standard. I agree with Mr Ellerton (at his [23]) that it is generally accepted that it is inappropriate to compare noise from gunfire directly with either the NZS 6802 guideline limits, or with conventional noise limits such as those outlined in the NPPODP. This is because such an approach is likely to understate the level of disturbance caused by noise from gunfire, due to its character.

Ambient noise environment

22 The relevance of the ambient noise environment to the assessment of acceptable noise levels here, appears to be a point of divergence between myself and Mr Ellerton. In my view, the ambient noise environment in the vicinity of those receiving noise from a source is a relevant matter when determining what effect the noise may have. This is a conventional approach – for example section 6.5.2 of NZS 6802:2008 states "*When considering noise effects, the intrusiveness of a specific sound is dependent on several factors. One of these factors is the level of the specific sound compared to the background sound level. C6.5.2 Comparison of proposed sound levels with the existing sound environment is one factor that can be relevant in the assessment of effects from a new proposed activity to be added to that environment and in the determination of a reasonable level when assessing the best practicable option*.".

23 Many shooting ranges are located in rural areas, away from sources of constant ambient noise such as busy roads. That is not the case here.

24 Elevated noise levels are experienced at Mr Phillips house and secondary dwelling, and in the FUZ, generated by a high volume of traffic on a State Highway. As Mr Ellerton notes in his 7 June 2022 memo, *"…the ambient noise level is elevated due to road traffic. The presence of this noise is not going to disappear…*".

25 Traffic on State Highway 3 has been demonstrated in Mr Ellerton's 7 June 2022 memo to consistently generate daytime noise levels in the order of 56 dB LAeq to 58 dB LAeq at the secondary dwelling at 1222 Devon Road. The daytime 'background' noise level (noise level at the quietest times) is consistently 48 dB LA90 or higher. I expect that traffic noise levels will be in the order of 3 dB higher at the main dwelling at 1222 Devon Road. On the roadside on the opposite side of State Highway 3 to the Club, daytime traffic noise levels are in the order of 73 dB LAeq, with background noise levels of 58 dB LA90. At the closest possible dwellings in the Future Urban Zone (FUZ), I have calculated that the ambient noise levels are expected to be in the order of 67 dB LAeq.

26 I therefore disagree with Mr Ellerton's derivation of 60 dB LAeq in this location in paragraph 46 of his evidence (where he states *"[t]his means that at 20m from the road edge the ambient noise level may be around '60dB LAeq..."*). As noted above, Mr Ellerton's 7 June 2022 memo shows ambient level of 56 to 58 dB LAeq at the Mr Phillip's secondary dwelling (consistent with the 55 – 60 dB LAeq he mentions in his paragraph 36), not the 50 – 55 dB LAeq he mentions in his paragraph 41. The secondary dwelling is also more than his assumed 80 metres from the highway. I also note that Mr Ellerton reported an ambient noise level of 67 dB LAeq at a location *60 metres* from the road edge in his 7 June 2022 / 6 December 2023 memos. My predicted level is based on modelling of the State Highway calibrated to measurements. I am highly confident of its accuracy.

27 The significance of the noise is confirmed via NOISE-S3 of the NPPODP which appropriately requires dwellings built within the State Highway Noise Control Boundary overlay (extending 80 m from the edge of the State Highway carriageway) to be fitted with sound insulation – as these levels are at least 10 dB higher than would be suitable for unmodified dwellings.

Approaches tailored to gunshot noise

28 As stated above, in line with the scope of NZS 6802:2008, I consider that the general NPPODP noise limits are not suitable for determining potential noise effects

of gunshot noise. In some other situations involving noise from firearms, criteria have been developed which seek to directly control the noise level of actual gun shots - usually expressed as either Lpeak or LAFmax. In other examples, stringent LAeq limits or the Composite Noise Rating (CNR) have been used. These metrics are functions of both the noise level of gun shots, and how many shots occur in a day.

LAFmax

29 I consider the initial focus of any gunshot noise management should be on reducing the LAFmax noise level of actual gunshots. If the noise level of all gunshots is reduced far enough, the issue of how many shots occur and when, becomes less critical.

30 A review of various international guidance, and precedent in New Zealand, suggests that generally noise mitigation measures should endeavour to ensure noise from individual gunshots does not exceed 50 – 65 dB LAFmax at residential receivers, depending on the location, ambient noise levels, and situation.

31 Considering the existing ambient noise environment in this case, the hours and intensity of use described below, along with the above guidance and precedent, I have advised the Club that the design objective for the physical mitigation for the Club should be to endeavour to achieve in the order of 65 dB LAFmax at the notional boundary of the residential dwellings at 1222 Devon Road, during representative high noise periods (and 70 dB LAFmax at any eventual FUZ dwellings).

32 If gunshot noise is reduced to at or around this level, while the gunshots will still be readily audible, they will only 'emerge' over the ambient noise to a modest degree. If this is achieved, I expect the situation in terms of potential annoyance to be similar to other more conventional situations where the Court has determined 50 – 60 dB LAFmax to be appropriate for gunshot noise in the absence of constant road traffic noise. For example:

- In the *Gisborne Pistol Club*[1] case background noise levels were recorded as low as 30 dB LA90, and in *Harvey v Nelson City Council*[2] background levels were

[1] Gisborne Pistol Club case (Davis v Gisborne District Council [2020] NZEnvC 74 interim decision and Davis v Gisborne District Council [2020] NZEnvC 116 final decision.)

[2] Harvey v Nelson City Council [2011] NZEnvC 98

as low as 29 dB LA90. In those settings, 50 – 55 dB LAFmax would also be clearly audible – but was determined to be appropriate by the Court.

- In *Loaded NZ Western Bay of Plenty*[3], ambient levels were even lower at 25 dB LA90, and a limit of 60 dB LAFmax was endorsed by the Court.

33 The existence of the elevated ambient noise in this case is, in my opinion, a highly relevant factor in terms of, for example, the FIDOL factors which the Court put some weight on in *Harvey v Nelson City Council* and have been referred to in subsequent cases. The relevant aspect is 'L' (location) – for example, whether the range is located in a "typical rural location", and what the other sources and levels of existing noise have previously been taken into account.

34 Mr Ellerton's memo dated 7 June 2022 suggested a noise limit 10 dB more lenient than that which would otherwise have applied at that time as *"…the ambient noise level is elevated due to road traffic. The presence of this noise is not going to disappear…*". This is consistent with NOISE-P3 which directs "*the character and amenity of the location*" to be considered, to ensure noise effects of an activity are appropriate (which in turn is consistent with section 6.5.2 of NZS 6802:2008 as described above).

35 Similarly, in a summary table provided in a Marshall Day Acoustics report *Peak View Range – Noise Emission* (attached as appendix 2), measurement results for six different shooting ranges were summarised. The ranges can be seen to generate up to 55 to 63 dB LFmax at nearest receivers, while ambient noise levels (even including noise from the ranges themselves) are only 35 to 49 dB LAeq. Again, this supports the proposition that a mitigation design target in this ambient environment (ambient 56 to 58 dB LAeq) of 65 dB LAFmax is reasonable, and will ensure that adverse noise effects are only minor.

36 In this case I understand the 1222 Devon Road neighbour has found the current and historic gun club noise emissions to be very concerning. As discussed below, the neighbour has been experiencing levels of 72 to 80 dB LAFmax at the notional boundary of their dwellings. Their experience will be significantly different once physical mitigation has been implemented and noise levels reduced.

[3] Loaded NZ Western Bay of Plenty case (Brooks v Western Bay of Plenty District [2011] NZEnvC 216)

CNR

37 I consider that the above approach to mitigation design will reduce gunshot noise levels to a point where the intensity and hours of shooting are less critical. Mr Ellerton has discussed the concept of a CNR 90 to 95 control in his memos from February 2022 onwards, originally citing evidence produced in relation to the Waitemata Gun Club as precedent. Such a control would be one way to ensure that the effects of noise from the activity are minor as it controls the intensity of shooting (combined with the mitigation design objectives of 65 dB LAFmax at the notional boundary of the secondary dwelling at 1222 Devon Road and 70 dB LAFmax at the notional boundary of future dwellings within the FUZ).

38 Following discussions with Mr Ellerton, in the draft Conditions circulated to the Council by Mr Edwards 2 February 2026, it was suggested that the CNR could be calculated as follows (Mr Ellerton has now provided further comment on this in his evidence, which I respond to in paragraphs 90 - 92 below):

CNR = (Y – A) + 10 log10 N + 10 log10 T – 12

where:

> *Y is the log average LZpeak level of the 25 loudest gunshots occurring that day*
>
> *A is 13, which is the most pessimistic 'community adaption factor' allowed by the method*
>
> *N is the number of gunshots occurring that day*
>
> *T is the proportion of the 'daytime' period in the underlying District Plan noise limits, represented by the period between when the first and last shot is fired on the day*

39 Although it could be argued that the CNR 90 is stringent as it was not developed for receivers exposed to elevated ambient noise, when applied as above in this receiving context, a CNR 90 control appears to provide a reasonable approach to managing noise. There is some precedent for a CNR 90 limit in New Zealand – including for the *All Terrian Park Zone* in the Western Bay of Plenty District Plan. However, that Rule has a moderate 'community adaption factor', meaning it is in effect 12 dB more lenient than what is proposed here, and would not be applied in a situation with constantly elevated ambient noise.

40 The wording of the draft conditions attached to the evidence of Mr Edwards would see this CNR 90 limit also apply to any dwelling constructed in the Future Urban Zone. I consider this to be a very conservative approach, as such dwellings will be located in a high traffic noise environment, be fitted with sound insulation in accordance with NOISE-S3, and it is unusual to assume occupants would arrive already sensitised to gunshot noise.

Hours of shooting

41 As above, the proposed hours of shooting are:

- Between 0900 and 2100 hours Monday to Saturday, and 0900 to 1700 hours Sunday.

42 In addition, there will be set periods of 'low noise' 1200 to 1500 hours Monday to Friday, and 1700 to 2100 hours Saturday.

43 As noted above, the NPPODP does not seek to generally provide a particularly high level of amenity protection in these zones. The proposed hours are more restrictive than the combined daytime / evening period outlined in the general noise rules in the NPPODP (0700 to 2200 hours), and the 'daytime' period which existed in the Plan at the time the Application was lodged (0700 to 2200 hours). I note the *Western Bay of Plenty All Terrain Park Zone* has a timeframe of 0700 to 2200 hours which accompanies the CNR 90 Rule I have discussed above. The CNR method itself envisioned firing taking place from 0700 to 2200 hours[4]. I therefore consider that these restrictions will ensure any noise effect is only minor.

Intensity of shooting

44 As noted above, the NMP will set out how the CNR 90 will be achieved, and will include a limit to 2,700 rounds being discharged Monday to Saturday. This will provide a high level of certainty that the CNR 90 requirement will be achieved. As noted above, on Sundays, the number of rounds discharged may be higher, with CNR achievement regulated by gun types, structured shooting and ranges used. With these processes in place, I am confident that compliance with the CNR 90 will be consistently achieved.

[4] Carter N.I. (1977). A Method for Evaluating Community Response to Noise from Military Firing Ranges. NAL Report No. 67

PROPOSED PHYSICAL MITIGATION

45 After an initial assessment, various physical mitigation strategies were agreed upon with the Club to reduce levels received at neighbouring sites. This includes the following significant physical mitigation as depicted in the proposed site plan, included as Figure 8 in the section 42A report:

- A series of containers in locations around Ranges 1, 4, 5 and 7.
- Acoustic fencing to be installed in locations around Ranges 1, 2, 3, 4 and 7.
- A new two storey club building, blocking line of site to 1222 Devon Road, including absorption products to be installed in key shooting bays.

46 A sheet piling option may also be implemented along Range 1, which would provide the same reduction as the container option.

47 These measures are expected to reduce LAFmax noise levels by 7 to 16 dB (depending on which Range shooting is from) at the notional boundary of the 1222 Devon Road secondary dwelling, compared to what has been experienced historically by this neighbour. With reference to my paragraphs 59 to 61 below, a similar reduction is expected compared to the 1983 LAFmax levels. This is a significant reduction – with the change for most Ranges expected to be subjectively perceived as ‘half as loud’ or less.

48 Along with the hours and CNR limitations described above, the Club will be required to prepare and maintain a NMP similar to the draft NMP which has been attached as an Appendix to this evidence. As outlined above, a key aspect of the NMP is to describe the processes the Club will use to ensure they are operating within the CNR 90 requirement. A verification measurement exercise will also be undertaken to provide confidence in the effectiveness of the physical mitigation once it is completed, and then noise levels will be monitored in perpetuity via a permanent noise logger. This data will be made available to the NPDC.

EXPECTED NOISE LEVELS

49 The LAFmax and CNR levels associated with the mitigated Club have been modelled based on data gathered during a structured shooting exercise undertaken on the 25th and 26th of May 2024, and on measurements taken by Mr Ellerton on five different occasions between 20 February 2022 and 28 May 2022, primarily at the notional boundary of the 1222 Devon Road secondary dwelling. I have also

compared the data with measurements undertaken at several gun ranges around the country, and there is a high level of correlation.

50 SoundPLAN computational noise modelling based on ISO 9613 Acoustics – Attenuation of sound outdoors – Part 2: General method of calculation was used to calculate the propagation of gunshot noise from the site, taking into account the topography of the area, and sound power levels for each of the noise sources.

51 A 'representative high noise scenario' has been considered which is typical of the outcomes of Mr Ellerton's testing during periods where 9 mm pistols were in regular use, and occasional 'black powder' shooting. My detailed measurements confirmed that in general terms, firearms such as a 0.44 black powder revolver and 0.38 handgun were 3 – 7 dB quieter on an LAFmax basis than a 9 mm standard load pistol. 0.22 firearms are at least 11 dB quieter. Therefore, in reality, there are expected to be extended periods where quieter firearms are in use (for example .22 calibre firearms) and noise levels are 5 – 10 dB lower than those predicted below. Suppressed .223 firearms used by the Police are expected to be quieter again.

52 Based on this modelling, noise levels associated with Ranges 2 to 7 when received at the notional boundary of the 1222 Devon Road secondary dwelling are expected to reduce from between 72 and 80 dB LAFmax (depending on Range), to between 61 and 65 dB LAFmax (depending on Range). In the case of Range 1, while levels will be reduced from the current 75 dB LAFmax, it proved to not quite be practicable to achieve the 65 dB LAFmax mitigation design objective – with a predicted level of 67 dB LAFmax. I understand that use of Range 1 is relatively limited, and note a 2 dB difference in noise levels is typically indiscernible – so I do not consider this outcome to be problematic. The mitigations reflect the physical and practical constraints associated with the site, and in my opinion, after undertaking a great deal of review, are the best practical option for noise reduction at this Site. Overall, as noted above, these mitigated noise levels represent a significant reduction compared to the historic and current situation.

53 In his 7 June 2022 memo, Mr Ellerton set out a framework where if gun noise levels were reduced by 6 - 8 dB, they would comply with his (at that time) "appropriate modified noise limit". Such a reduction (or greater, on average) has now been achieved.

54 Based on these significantly reduced LAFmax levels, in the updated AENE I tested the expected CNR levels against a number of examples of actual days of scheduled shooting at the Club. This analysis confirms that it will be realistic to comply with a CNR 90 limit at the notional boundary of the 1222 Devon Road dwellings. For a

number of the examples, which were based on typical Sunday shooting, the CNR was in the range of 85 to 87 – indicating that the CNR 90 limit will have meaningful 'teeth' in some situations, such that the level and intensity of activity at the Club on any day cannot increase significantly from the current level (with mitigation in place). The nature of Sunday shooting, which involves structured competitions, is outlined in the evidence of Mr O'Sullivan for the Club. Mr O'Sullivan also presents more recent Sunday shooting data, gathered during 2026. Based on this data, again compliance with CNR 90 is expected.

55 I have undertaken similar analysis relating to examples of days when there is only casual use of the Club by members, Police and AOS use, and for Club events. The only scenario where it will not be possible to comply with the CNR 90 requirement would be the two events per year involving IPSC or Speed Competitions, as these may involve in the order of 7,000 shots per day from higher noise firearms. An exemption for these two events is included in the draft conditions attached to the evidence of Mr Edwards.

56 As per the draft conditions attached to the evidence of Mr Edwards, it is now also proposed that the Club complies with a CNR 90 limit at any future dwellings constructed in the Future Urban Zone, with the CNR calculation undertaken as if these neighbours were sensitised to noise. Should this scenario eventuate, in the first instance the level of activity on Ranges 6 and 7 could be moderated to stay within the CNR 90 requirement. The Club have identified practical further physical mitigation which would be implemented in that area in order to increase the utilisation of those Ranges again if they wished, which could be implemented once any due process to enable this was completed. This would most likely be a potential noise barrier behind Range 7. As above, I have recommended the design objective for such mitigation would be to reduce gunshot noise levels to 70 dB LAFmax.

57 With regard to compliance with the general NPPODP noise limits - as outlined above, NZS 6802:2008 warns against assessing gunshot noise against 'general noise limits' which use LAeq metrics. This is primarily because for this type of noise, the LAeq will correlate poorly with actual noise effects – and therefore there is a risk of understating the noise effects.

58 Notwithstanding - based on the measurements and modelling which has been undertaken, the Club as it has been operating historically may not have been compliant with a 55 dB LAeq(15 min) (daytime) and 50 dB LAeq (15 min) (evening) notional boundary noise limits in some instances at 1222 Devon Road. However, with the mitigation as outlined above, full compliance will be achieved – both at the notional boundary of both dwellings at 1222 Devon Road and at future

dwellings in the Special Purpose – Future Urban Zone (Mr Robinson maintains in his Table 3 that NOISE-R1 "is considered to apply", and Mr Edwards comments further on this matter).

THE CLUB AS ESTABLISHED IN 1983

59 I have been asked to consider what noise levels may have been associated with the Club as established in 1983. This is in reference to the lawfully established environment referred to in paragraph 85 of Mr Robinson's report which is limited to three ranges and 30 members. I have been provided with sufficient sketches and photographs to construct a noise model matching the topography, position, orientation and elevation of the three ranges which were established at that time.[5] Assuming the same firearm types were used then as are used now (Mr O'Sullivan advises me that is not the case, as typically louder firearms were in use in 1983) the noise levels expected at the notional boundary of the 1222 Devon Road secondary dwelling for the three Ranges would be expected to be approximately 79 dB LAFmax. This level is very similar to what is currently experienced from the use of Range 2, and louder than the use of all other current Ranges.

60 Whether the noise effect was similar would depend on the intensity of use of the facility in 1983 – however the LAFmax levels being similar or higher means that there is the potential for a similar overall noise effect. Mr O'Sullivan advises me that while the Club only had 30 members in 1983, ammunition was much cheaper, and the current Club configuration only enabled 21 people to shoot at any one time – so intensity of use may have been similar. I note the traffic noise which degrades the amenity in the area would have been substantially lower in 1983, meaning any firearms noise would potentially have had a greater effect.

61 Mr Edwards discusses the 'existing environment' comparison in his evidence.

SUBMISSIONS

62 I understand the only submission to raise significant concerns about noise is that of Mr Bryan Phillips, the owner of the 1222 Devon Road site. As above, I consider that LAFmax levels should be the starting point for the assessment of gunshot noise, and I am not aware of any research which would suggest the levels of up to 80 dB LAFmax which have been generated by the 'existing' scenario would not have a significant adverse effect – regardless of days, hours or intensity of use. On the

[5] Photographs are attached to the evidence of Mr O'Sullivan, President of the Club.

other hand, the extensive physical mitigation I have described in paragraph 45 above will lead to a direct and significant reduction in the level of gunshot noise experienced on all parts of Mr Phillips' property, and in my opinion reduce adverse noise effects to be minor. As the proposed new barriers are solid and close to the noise source, they will be more effective than the hedge which Mr Phillips mentions on page 5 in his submission.

63 Mr Phillips discusses the NPPODP noise limits on a number of occasions. As I have explained above, compliance or otherwise with those limits is not a key issue in this case – as even complying gunshot noise could have a more than minor effect due to its character. However, coincidentally, the proposed mitigation will reduce noise levels from the Club from sometimes non-complying, to always complying with the NPPODP general noise limits.

64 Mr Phillips queries which firearms are in use at the Club. From a noise perspective, should consent be granted and the proposed CNR 90 limit and noise monitoring terminal installed, it will be straight forward to identify an unexpectedly loud firearms and adapt the NMP to address their use, should this threaten compliance with the CNR 90 limit. The Club is proposing to certify all firearms prior to use as either 'low noise' or other, by testing each firearm at each range. However, I also understand that the permitted firearms are set out in Range Standing Orders in any event, and so one-off or unexpected use of louder firearms is not expected or permitted due to the processes associated with the Range Standing Orders. Mr O'Sullivan explains this in his evidence.

65 Mr Phillips raises the issue of noise effects on livestock. Generally, the proposed physical mitigation will be more effective the closer a receiver is to the Club. Therefore, I expect a marked reduction in noise levels in the paddock closest to the Club. Notwithstanding – rural land directly adjoining shooting ranges is a very common configuration, and I am not aware of this ever leading to significant issues in other cases.

66 Mr Phillips is concerned about the proposed operating hours. As above, his experience is based on noise levels which are considerably elevated, compared to what will eventuate if consent is granted. As I have also described above, the NPPODP does not guarantee a particularly high level of amenity in the Rural Production Zone, and the proposed hours are within the range of what is typically permitted for daytime noise sources which are expected to cause similar levels of annoyance as the mitigated Club is expected to, in this particular receiving environment.

67 Mr Phillips discusses shooting outside permitted hours. I understand that a swipe card access system is installed at the Club entry, and once upgrades are complete, will also be installed at the entry to each Range. The Hello Club App will also be used to communicate with all members. I consider that these processes will improve the ability of the Club to communicate with members, and the swipe card system will be able to be used to physically prevent access outside of hours, or to members where any matters relating to irresponsible noise emissions have not been resolved. As far as I am aware, the Club has not breached the terms of the abatement notice issued nor subsequent agreements with Council that restrict hours during the interim period until any Consent is granted.

68 Overall, I consider that what is now proposed in terms of physical and managerial mitigation will substantially mitigate many of the effects of concern to Mr Phillips – principally because these measures were designed for that very purpose.

SECTION 42A RESPONSE

Background

69 In the below section I explain discussions I have had previously with Mr Ellerton, leading to the adoption of the CNR 90 limit now proposed by the Club and the work undertaken to develop mitigation that will achieve the LAFmax levels at Mr Phillip's primary and secondary dwellings as described above. As I explain in this section, I am concerned with Mr Ellerton's comments at his paragraph [92] that a 55 dB LAFmax limit would be more appropriate (although I am unsure whether Mr Ellerton is proposing this as a limit as he states "*if that criteria had been proposed as a condition/adopted in NMP*").

70 As stated above, I was engaged by the Club in November 2023, and immediately reviewed Mr Ellerton's following memoranda:

- 22 February 2022 memo (where he suggested a CNR 90 – 95 control "in the absence of better noise criteria"),

- 10 March 2022 memo (which is largely similar to the 22 February 2022 memo), and

- 7 June 2022 memo where Mr Ellerton reported ambient noise levels, LAFmax levels, and LA10 noise levels.

71 Along with discussing a possible CNR limit of 90 (appearing to have settled on that figure, as opposed to 90 – 95 in the earlier memos), in his 7 June memo Mr Ellerton also suggests a noise limit of 60 dB LA10 may be appropriate (i.e. 10 dB more lenient than the 50 dB LA10 District Plan limit which applied at that time), given the ambient noise environment. I note that an LA10 limit is very lenient for firearms noise, as each shot is very brief so unless the intensity of firing is very high (approaching 1 shot per second, sustained for a 15 minute measurement period), it will not affect the LA10 level. Mr Ellerton in these memoranda appeared to accept that a relatively lenient approach may be appropriate in this case, due to the ambient noise environment.

72 On 12 December 2023 I attended a meeting with Mr Ellerton, Mr Robinson and others, hosted by the Club. At that meeting I expressed some reservation about the complexity of the CNR metric, and my interest in LAFmax levels and a management approach. I also alerted Mr Ellerton to what in my view was an error in the way he had been processing his measurement data to produce LA10 levels – which meant that the Club had likely been complying with the District Plan LA10 limit which applied at that time.[6]

73 On 10 July 2024 my draft AENE (AES Report AC23328 – 01 – R4 dated 4 July 2024) was provided by Mr Edwards to Mr Robinson with a covering note stating that the "*Direction from the Environment Court is seeking lodgement of the consent application by the end of the month. I have advised the club this will be challenging to achieve. We would appreciate any review comments from yourself and Damian* [Mr Ellerton]. *Happy for Damian to connect directly with Jeremy at AES to discuss any matters*." That report focused primarily on LAFmax and a management approach, an approach that I had foreshadowed to the Council.

74 No feedback was received in the three week period before the deadline, and on 2 August 2024 an AENE report (AC23328 – 01 – R5 dated 1 August 2024) was lodged with the Application, with only very minor changes compared to the 4 July 2024 draft, arising from internal review.

75 On the 12th of September 2024 an RFI was received from the Council. Attached to the RFI was a further memo from Mr Ellerton, dated 5 August 2024, which contained comments on the AC23328 – 01 – R4 4 July 2024 draft AENE. It appeared that unfortunately that memo had been provided to Council 4 days after

[6] This finding was an outcome of questions I had put to Mr Ellerton earlier in December 2023, which he responded to in his memo dated 6 December 2023

the deadline set by the Court, and so there was no opportunity to consider to what extent Mr Ellerton's feedback could be accommodated, before lodgement.

76 Mr Ellerton's 5 August 2024 memo presented some possible "broad noise limit options" framed in terms of LAFmax. However, those conditions were considerably more stringent than a 60 dB LA10 or CNR 90 control – and involved limits of 55 or 60 dB LAFmax. Having spent many months working with the Club to investigate the effectiveness, practicality and cost of various physical mitigation options aimed at implementing the best practicable option to reduce LAFmax levels, it is clear to me that the LAFmax levels outlined in my paragraph 52 above (61 to 65 for Ranges 2 to 7, and 67 dB LAFmax for Range 1) are the lowest levels which can be achieved. 'Limits' of 55 or 60 dB LAFmax are unachievable and essentially amount to a decline of Consent and closure of the Club at its current location.

77 While I can understand how Mr Ellerton had arrived at his previously discussed possible limits of 60 dB LA10 and CNR 90, I remain uncertain if Mr Ellerton has now formed a view on using a 55 dB LAFmax limit – which would be inconsistent with some of his previous communications. For example:

- In his 7 June 2022 memo, Mr Ellerton provided some examples of how the Club, while implementing no physical mitigation at all, could comply with a CNR 90 limit, by moderating how many rounds were fired in a day. This would have involved very high LAFmax levels (up to 80 dB LAFmax).

- In his 30 January 2025 memo, Mr Ellerton nominated a 500 metre radius around the Club, within which neighbours should be notified. The test for notification is a possible minor or greater effect. My modelling indicates that to the north-west, outside a 500 metre radius, gunshot noise levels remain up to 60 dB LAFmax, and are received at dwellings which are well removed from the State Highway. It seems inconsistent that possible noise effects at such dwellings were determined to be "less than minor", while at the same time is it is suggested that 55 or 60 dB LAFmax is required at 1222 Decon Road or future dwellings in the FUZ, or effects may be considered to be "more than minor".

78 While I acknowledge Mr Ellerton has been considering matters for some time, his suggestions have varied from a 60 LA10 limit which would represent minimal constraint to the Club, to a 55 LAFmax limit which, as stated above in this evidence, cannot be achieved at the Club's current location.

79 Reflecting on the above, and after extensive further discussions with the Club about the complexity and practicality of a CNR control, an updated AENE report was

produced (AC23328 – 02 – R3 dated 6 December 2024). This report was attached the RFI response, and (as noted) superseded the earlier report that had suggested an LAFmax limit. This updated report reverted to the primary proposed control being a CNR 90 limit. This change in approach was intended solely to narrow the difference between Mr Ellerton and myself. For my part, I consider the extensive physical mitigation developed at in consultation with the Club to achieve reasonable LAFmax levels, is also critical, because without it noise from individual gunshots is too high – regardless of whether the number of shots could be manipulated to comply with CNR 90. Therefore, this revised AENE report still mentions LAFmax levels – as this is the best way to quantify and consider the effectiveness of the mitigation measures on each Range. I believe the updated report is clear that LAFmax levels are only being now discussed in that context, and not as potential "limits". CNR 90 is the proposed limit.

80 Following some correspondence between myself and Mr Ellerton, Mr Ellerton provided his 30 January 2025 memo (attached to his evidence). I found this memo to be a clear articulation of Mr Ellerton's views at that time, and helpfully on the first page in bold was a section which stated "*By way of summary we have distilled our outstanding questions as follows:…*". The draft Conditions and NMP which were subsequently produced and circulated were intended to address some of these points. In Part 1 of the response below, I have provided comment on each of these "outstanding questions" from the 30 January 2025 memo. In this section I have also provided responses to the point's Mr Ellerton raises in paragraphs 78 to 83 of his evidence which have similar themes. In Part 2 of this response, I have commented on other aspects of Mr Ellerton's evidence.

Part 1

DE comment from 30 January 2025 memo: *Where was the ambient noise obtained via logger during May 2024? Please send a copy of the details regarding the equipment used and the personnel responsible as well as the raw and filtered noise logging data.*

81 As above, I do not consider the noise produced by the State Highway to be a complex issue. The generation and propagation of road noise is well understood. I did take this comment to be related to the proposed approach for the FUZ – where I had originally suggested some different CNR approach to 1222 Devon Road would be appropriate, as traffic noise levels are higher, and people would be 'coming to the nuisance'. I understood Mr Ellerton's questions to be an attempt to interrogate whether traffic noise levels really were higher, closer to the State Highway. However, the same CNR 90 control is now proposed for all receivers, with no

leniency provided for new dwellings. I therefore assume that the issue of the exact level of traffic noise in this location is now of little relevance – although as I have described in paragraphs 24 to 27 above I have no doubt as to what the traffic noise levels are in the FUZ. I would be happy to discuss this issue with Mr Ellerton in conference.

DE comment from 30 January 2025 memo: *We consider the character of firearm noise is significantly different to the noise of road traffic noise. We do not agree with the suggestion that the sound of gunfire would "emerge over the ambient noise to a modest degree".*

82 I agree with the first sentence of this statement. With regard to the second sentence, in the AENE in section 2.4 I state the gunshots would be "readily audible". I do not believe that limiting noise effects to a minor level requires that the noise of gunshots be inaudible. I have explained above how the context provided by the ambient environment is routinely considered in noise assessments, discussed in NZS6802:2008, NOISE-P3 (and by Mr Ellerton in his 7 June 2022 memo). In very round terms the 'ambient environment' in this case is 50 to 60 dBA, and the expected LAFmax from gunshots is 65 dBA. In addition, as I have explained above, other shooting activities which have gone before the Court, where in equally round terms the 'ambient environment' was 30 to 40 dBA, and the expected LAFmax from gunshots has 50 to 60 dBA (also 'clearly audible' in that context). My point is that the potential for disruption and impacts on amenity of 50 to 60 dB LAFmax in quieter environments is similar (or greater) than the potential for disruption of 65 dB LAFmax in a 'noisier' environment as here.

DE comment from 30 January 2025 memo: *The use of CNR as a criteria used in determining potential noise levels which we agree with. There is also reference compliance with the District Plan noise limits that we consider redundant.*

83 Mr Ellerton's agreement with CNR is noted (and it does not appear there was any confusion about whether CNR or LAFmax was being promoted as the 'noise limit' in the updated AENE). Mr Ellerton and I both agree that the District Plan noise limits are insufficient for regulating noise from the use of firearms, and I have explained in this evidence the relevance of District Plan noise limits as informing the degree of amenity expected in the relevant zone.

DE comment from 30 January 2025 memo: *We recommend the applicant draft a proposed noise condition for Council to review. In addition to a draft noise condition, a draft noise management plan would be prudent to illustrate how noise may be managed on a day to day basis.*

84 Draft conditions and a draft NMP were subsequently provided as requested.

DE comment from 30 January 2025 memo: *We understand the reference to LAFmax has been used in some instances to determine what effect noise mitigation may have in comparison to the noise model. It should be noted if the CNR noise limit is adopted it utilises the Lpeak acoustic parameter and therefore the potential variation in LAFmax / Lpeak values for different firearms should be factored into this.*

85 This was helpful confirmation that at the time of writing Mr Ellerton understood why I had retained some reference to LAFmax in the updated AENE, while CNR was to be the limit. I can confirm that in modelling expected CNR compliance from the Club's existing activities, I have factored in the different firearms and their Lpeak values.

DE comment from 30 January 2025 memo: *Should consent be granted, it would be anticipated that a noise monitoring condition be included to determine the actual noise mitigation provided by the proposed barriers and building structures.*

86 Such a condition is proposed, along with the installation of a permanent noise logger.

DE comment from 30 January 2025 memo: *The exemption of Police / AOS activity has not been previously discussed or agreed to and is not appropriate in our opinion.*

87 The draft conditions have now been worded such that no general exclusion to the CNR 90 limit applies, apart from in emergency situations. In his paragraph 79, Mr Ellerton confirms he considered the exemption for emergencies under the Policing Act 2008 to be appropriate.

88 Based on the above, upon reviewing the draft conditions and NMP, I expect a relatively narrow range of issues to be in contention between Mr Ellerton and I. Paragraphs 78 to 83 of Mr Ellerton's evidence do read as if this is the case and continue the direction of Mr Ellerton's 30 January 2025 memo. I comment on these paragraphs in this ('Part 1') section of my evidence.

89 In his paragraph 78, Mr Ellerton states he agrees with the concept of a CNR 90 limit which has exceptions for two, three-day events. He suggests the hours of operation be constrained during the events and use of "the facilities" be prohibited for 3 days before and after the events. Mr O'Sullivan has described how a complete

prohibition is not practical in his evidence, as competitors may need to practice and/or sight firearms.

90 In his paragraph 80, Mr Ellerton discusses the 'Y' variable in CNR formula, as it was defined in the draft Conditions. A known issue with the CNR formula is that if Y is based on "the log average LZpeak of all discharges" as Mr Ellerton requests, the CNR on a day can be lowered by a high amount of shooting from quieter firearms. This leads to non-sensical possibilities – for example, if the CNR is tracking over 90 during the first part of a day, the 'solution' is a high volume of shooting from quieter firearms in the afternoon. This issue was discussed by the noise experts in the evidence for the Auckland Unitary Plan Hearings relating to Waitemata Gun Club – however in my view they did not reach a satisfactory resolution (but rather, there appeared to be an informal 'gentlemen's agreement' to not include "the quieter shots" (undefined) in the CNR calculation).

91 I have reviewed the measurements Mr Ellerton undertook in February, March and May 2022 at the Club, and if 'the log average LZpeak of all discharges' were to be taken into account, the CNR on those days would be 5 – 10 dB lower than I have previously calculated. There is no effects-based reason to introduce this extra leniency, and I consider the enhancement of the CNR formula which I had proposed (where Y is defined as the log average LZpeak level of the 25 loudest gunshots occurring that day) to be appropriate. It also reduces the burden of trying to accurately ascertain the level of 'quieter shots' in this high ambient noise environment. I would therefore prefer to retain the definition proposed.

92 In his paragraphs 81 and 82, Mr Ellerton discusses the 'T' variable in the CNR formula, as it was defined in the draft Conditions. The definition of T as it appears in the draft Conditions is an enhancement of the CNR formula which appears to have been developed by Marshall Day Acoustics. I consider this variation to be an improvement on the original CNR formula – where if there is no shooting on a day due to poor weather for example, more shooting is permitted on other days. With the Marshall Day enhancement, on any given day there is some incentive for the noise producer to start shooting later, and finish shooting earlier, regardless of what the official permitted operating hours are. I would therefore also prefer to retain this definition as proposed.

93 In his paragraph 83, Mr Ellerton requests a method be developed for anticipating the CNR prior to use of the site on a daily basis to ensure compliance. I am not aware of a requirement like this being imposed in any other situation involving CNR, nor more generally being an expectation for the many non-shooting activities which operate under specific noise limits, and have a variable level of activity on

site from day to day (for example, a contractors yard, or events venue). In this case permanent noise logging is proposed, and the NMP would put in place a robust framework to control the process around how the CNR limit will be achieved and/or readily checked for compliance.

94 The two scenarios currently described in the draft NMP are:

- Planned club activities. These activities are highly structured (in terms of how many shots will be fired, and from what ranges). For days when these activities occur, it is straight forward to calculate the CNR in advance.

- Casual use by Club members – for practice or recreation. As the Club currently operates, this use cannot be anticipated in advance. However, a high level of loud shooting would be required to approach CNR 90. This would mean either many people coincidentally 'casually' attending on the same day, or a few people who shoot an unusually high number of shots. The evidence of Mr O'Sullivan explains why this would rapidly come to the attention of those responsible for managing noise. This is "the origin" of the 2,500 threshold which currently appears in the draft NMP – as table 7.1 of the AENE and the text which follows demonstrates, at 2,500 shots from the loudest firearms, the CNR may approach 87. While that may appear that a breach is imminent, it should be noted that the CNR is a logarithmic measure, and a full further 2,500 shots would be required to actually reach CNR 90 – and even more to exceed it. I am therefore very comfortable that the types of measures contained in the draft NMP would be more than adequate to position the Club well to intervene, should there ever be a day where casual use approached the CNR limits.

95 All of the other precursors to the activity being "permitted to occur" outlined in Mr Ellerton's paragraph 83 are addressed in the proposed Conditions.

Part 2

96 At a number of points in his evidence, Mr Ellerton appears to revert to asserting or implying that a noise limit of 65 dB LAFmax is sought (for example paragraph 20, 40 and through paragraphs 52 to 55, paragraph 63). As I have explained above this is not the case.

97 In his paragraphs 27 and 28, Mr Ellerton expresses some concerns about CNR. Mr Jon Styles outlined similar concerns in his evidence relating to the Waitemata Gun Club (evidence of Jon Styles dated 4 February 2016, paragraphs 6.4 and 6.5,

attached as Appendix 3). However, I note that Mr Styles provided further context in his paragraphs 6.7 and 6.7, which read as follows:

"Notwithstanding my own opinion, I note that the CNR metric has been implemented in numerous cases both in New Zealand and abroad and that the basis of the equation appears relatively sound, and on this basis the use of this metric is acceptable in the case of the WGC and can be used to assist in the assessment of effects along with reference to the other relevant noise measurement metrics.

The CNR noise limit should not be the sole determinant of a noise limit, and the LZpeak, LAmax and LAeq levels should all be considered in the process of arriving at a limit."

98 Notwithstanding, while his paragraphs 27 and 28 may suggest Mr Ellerton is having 'second thoughts' about the CNR 90 control, in paragraph 78 Mr Ellerton states he indicates he "agrees with the concept" of CNR 90.

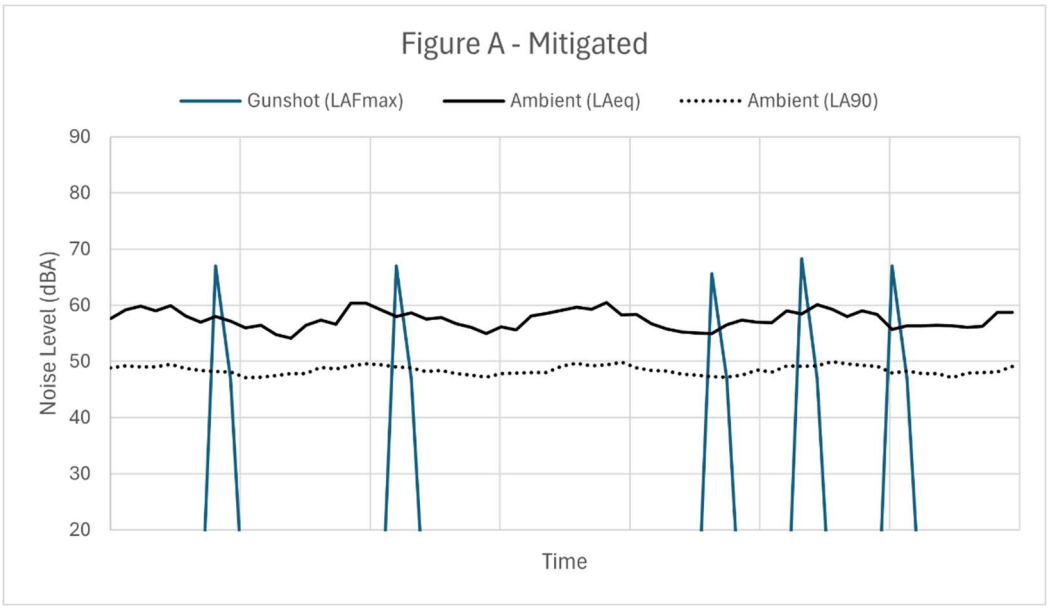
99 In his paragraph 37, Mr Ellerton stresses that noise from the Club is "clearly and distinctly audible". As I have stated above, I agree that the current, unmitigated, noise levels produced by the Club are "audible" (as will be the mitigated noise levels, and as was the Club in 1983). The audibility of the existing situation is not in question.

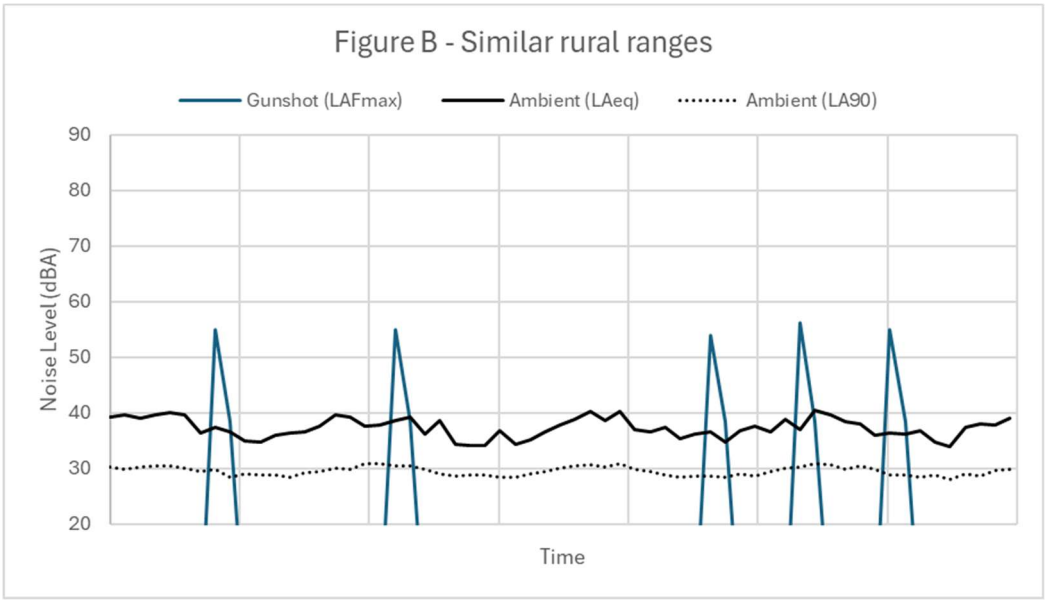
100 In his paragraph 38 Mr Ellerton suggests it would be prudent to include appropriate noise limits for future residential receivers in the FUZ. I agree.

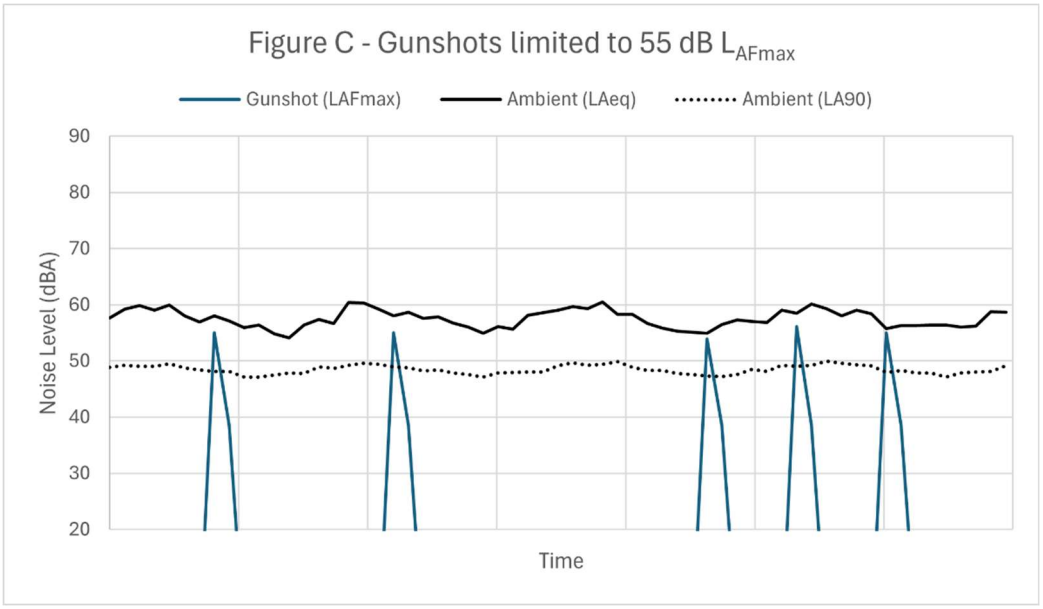
101 In his paragraph 40, Mr Ellerton paraphrases the (superseded) 1 August 2024 AENE, as stating that 65 dB LAFmax is acceptable in this context "because the cumulative or additive effect is small". The paragraph referred to was one that explained that the noise would be acceptable because the LAFmax levels would be only 5 – 10 dB higher than the ambient noise, and that was more conservative than other situations where levels of 55 dB LAFmax had been permitted, in much quieter environments.

102 Mr Ellerton's Figure 1 is a figure of the current, unmitigated, situation at 1222 Devon Road, where he reiterates that the current noise is audible, and the LAFmax levels are 15 – 20 dB above those without firearms noise. Mr Ellerton states the LAFmax levels are 70 dB LAFmax, and the non-firearms LAFmax levels are "15 – 20 dB" lower (paragraph 44). As noted above in this evidence, that cannot be correct, when the ambient LAeq levels in this location are 55 – 60 dB LAeq (as stated in Mr Ellerton's paragraph 36).

103 I do agree that figures may be useful to illustrate the points around this issue and so have produced my own stylised illustrations below. Figure A shows the 'with mitigation' situation expected at 1222 Devon Road – with ambient noise levels between 50 and 60 dBA and gunshots of up to 67 dB LAFmax. Figure B shows the types of more typical rural ambient environments I discuss in paragraph 32 above where ambient levels vary between approximately 30 and 40 dBA, and gunshots of up to 55 dB LAFmax as have been permitted in other cases. Finally, Figure C shows the scenario Mr Ellerton appears to be referring to in his paragraph 92, with a limit of 55 dB LAFmax for gunshots in the 1222 Devon Road ambient environment. I consider these figures demonstrate that such an approach would be unusually conservative.







104 In his paragraph 42 and 43, Mr Ellerton outlines a test which he says could be used to demonstrate "minimal change in noise environment" or whether an "additive effect is acceptable". I disagree with Mr Ellertons test of only a difference in LAFmax levels of 2 – 3 dB. While Mr Ellerton states this degree of change is "typically" acceptable, the approach does not fit well with typical approaches for gunshot noise.

105 In his paragraph 57 Mr Ellerton reverts to the 1 August 2024 AENE, and discusses LAFmax levels within the FUZ, when referring to the limit proposed at the FUZ of 70 dB LAFmax. As outlined above, in response, a CNR 90 limit will apply at any dwellings constructed in the FUZ, irrespective of their materially different situation with regard to road traffic noise.

106 In his paragraph 58 Mr Ellerton correctly observes the proposed Conditions have a CNR limit, and no LAFmax limits. It is correct that there is then no direct control over the noise levels of individual gunshots (as Mr Ellerton demonstrated with the examples he included in his 7 June 2022 memo). I was concerned that this was a weakness of the CNR approach which is why, as described above, I have satisfied myself with regard to that aspect of the situation through extensive review and modelling, and have encouraged the Club to commit to an extensive mitigation programme to substantially reduce LAFmax levels. The Conditions also require measurements and ongoing monitoring.

107 Based on the footnote of Mr Ellerton's section titled "AES analysis" (paragraphs 59 to 61), this section is in response to the superseded AENE dated 1 August 2024. The points Mr Ellerton makes in this section have largely been covered above. I do wish to note in relation to Mr Ellerton's 60(vi) that I have never relied on a concept of "masking noise of firearm discharge". I also note that it is now proposed that the NMP will control the number of rounds fired.

108 In his paragraphs 62 to 76 Mr Ellerton provides his feedback on the draft NMP. Aside from an initial misunderstanding that the purpose of the plan is to demonstrate how compliance will be achieved "with the requested noise limit of 65 dB LAeq", I take Mr Ellerton's various points to be:

108.1 Paragraph 64 – suggests that the draft be updated to use plainer English. This can be readily implemented.

108.2 Paragraph 65 – discusses the scenario where all the physical mitigation work is not completed immediately. The Club would be required to comply with CNR 90 during this period, and so it is correct that the NMP

will address how that transition period is managed. Mr Edwards addresses this matter.

108.3 Paragraph 66 – relates to low noise periods. The low noise periods have now been fixed in time, in response to Mr Ellertons feedback.

108.4 Paragraph 67 – relates to noise monitoring. Mr Ellerton suggests noise monitoring should be conducted once the mitigation works are complete. This is proposed in the Conditions.

108.5 Paragraph 67 – Mr Ellerton is unsure of the relevance of 2,500 shots per day. This was explained in section 7 'CNR Outcomes and Management' of the 3 December 2025 AENE. I have explained the concept again above. As outlined above, a figure of 2,700 is now proposed to appear in the NMP. This is an inconsequential difference from a noise point of view.

108.6 Paragraph 69 – Mr Ellerton would like the output of the permanent noise logger to be available for 'real time' viewing. That can be provided.

108.7 Paragraph 70, 71 and 72 – Mr Ellerton discusses "proactive" determination of CNR. I have described above how a high level of certainty will be provided that the CNR 90 limit is not exceeded.

108.8 Paragraph 73 and 74 – Mr Ellerton discusses Police and AOS use. Such use is required to comply with the CNR 90 limit and is prescheduled so no particular additional processes are needed in the NMP. The 'Hello Club' system is only relevant in terms of the Club's processes for managing casual use by members. The Police and AOS are not casual users and do not use the 'Hello Club' system. With regard to Bushmaster suppression, I understand that this is 'business as usual'.

109 In his paragraph 76 Mr Ellerton provides a summary of his concerns about the draft NMP. As above, it appears his concerns are addressed by the updated draft Conditions or can be readily addressed in a future update of the NMP – which ultimately would be provided to the Council for review and certification in due course.

CONCLUSIONS

110 In line with the scope of NZS 6802:2008, I consider that the general NPPODP noise limits are not suitable for determining potential noise effects of gunshot noise. Instead, I consider the initial focus of any gunshot noise management should be on reducing the LAFmax noise level of actual gunshots. If the noise level of all gunshots is reduced far enough, the issue of how many shots occur and when, becomes less critical. I consider the ambient noise environment in the vicinity of those receiving noise from a source is also a relevant matter when determining what effect the noise may have.

111 Mr Ellerton originally introduced the concept of a CNR 90 to 95 control for the Club in 2022. Such a control would be one way to ensure that the effects of noise from the activity are minor as it controls the intensity of shooting (combined with the mitigation design objectives of 65 dB LAFmax at the notional boundary of the secondary dwelling at 1222 Devon Road and 70 dB LAFmax at the notional boundary of future dwellings within the FUZ).

112 Following discussions with Mr Ellerton, in the draft Conditions circulated to the Council by Mr Edwards 2 February 2026, a formula for calculating and applying a CNR 90 limit was suggested. When applied in this receiving context, such a CNR 90 control appears to provide a reasonable approach to managing noise.

113 After an initial assessment, various physical mitigation strategies were agreed upon with the Club to reduce LAFmax (and by association, CNR) levels received at neighbouring sites. As outlined in the updated draft Conditions attached to the evidence of Mr Edwards, other key controls on the proposed activity from a noise perspective include:

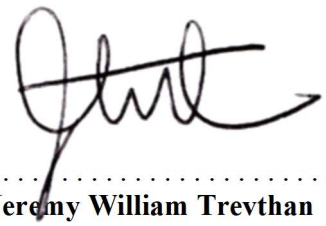
- Shooting will be restricted to between 0900 and 2100 hours Monday to Saturday, and 0900 to 1700 hours Sunday. In addition, there will be periods of low noise 1200 to 1500 hours Monday to Friday, and 1700 to 2100 hours Saturday.

- A NMP will set out how the CNR 90 will be met. The NMP will include a requirement that the number of rounds discharged per day Monday to Saturday will not exceed 2,700. This will provide a high level of certainty that the CNR 90 requirement will be achieved. Sundays are internal Club competition days with a high level of prescription as to use of the ranges, so the CNR can be calculated readily in advance.

114 Based on my modelling, LAFmax noise levels when received at the notional boundary of the 1222 Devon Road secondary dwelling are expected to reduce from between 72 and 80 dB LAFmax, to between 61 and 67 dB LAFmax. Based on these significantly reduced LAFmax levels, CNR levels are expected to comply with the proposed 90 limit, while the Club operates in a manner which is sustainable for its continued operation.

115 I understand the concerns of Mr Phillips, the closest neighbour. I consider that what is now proposed in terms of physical and managerial mitigation will go a long way to directly mitigating many of the effects of concern to Mr Phillips. I expect the proposed Conditions to ensure noise effects at the notional boundary of Mr Phillips dwellings are reduced to be only minor.

Date: 4 May 2026



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Jeremy William Trevthan

APPENDIX 1: Draft Noise Management Plan dated 3 December 2025

File Ref: AC23328 – 04 – D1

New Plymouth Pistol Club

DRAFT NOISE MANAGEMENT PLAN

Prepared: 3 December 2025
Version: Draft for comment

1.0 INTRODUCTION

1.1 Scope

This Noise Management Plan (NMP) provides methodologies which will ensure that the noise associated with the operation of New Plymouth Pistol Club (the Club), located at 1220 Devon Road, Bell Block, New Plymouth is appropriately managed, and that community goodwill is maintained. The site functions as a gun club, and occasionally hosts national and international shooting events, as well as shooting from club members and other groups that book the facilities.

There is a neighbouring site at 1222 Devon Road to the east, with primary and secondary dwellings located approximately 120 - 130 metres away, as can be seen in figure 1.1 below.

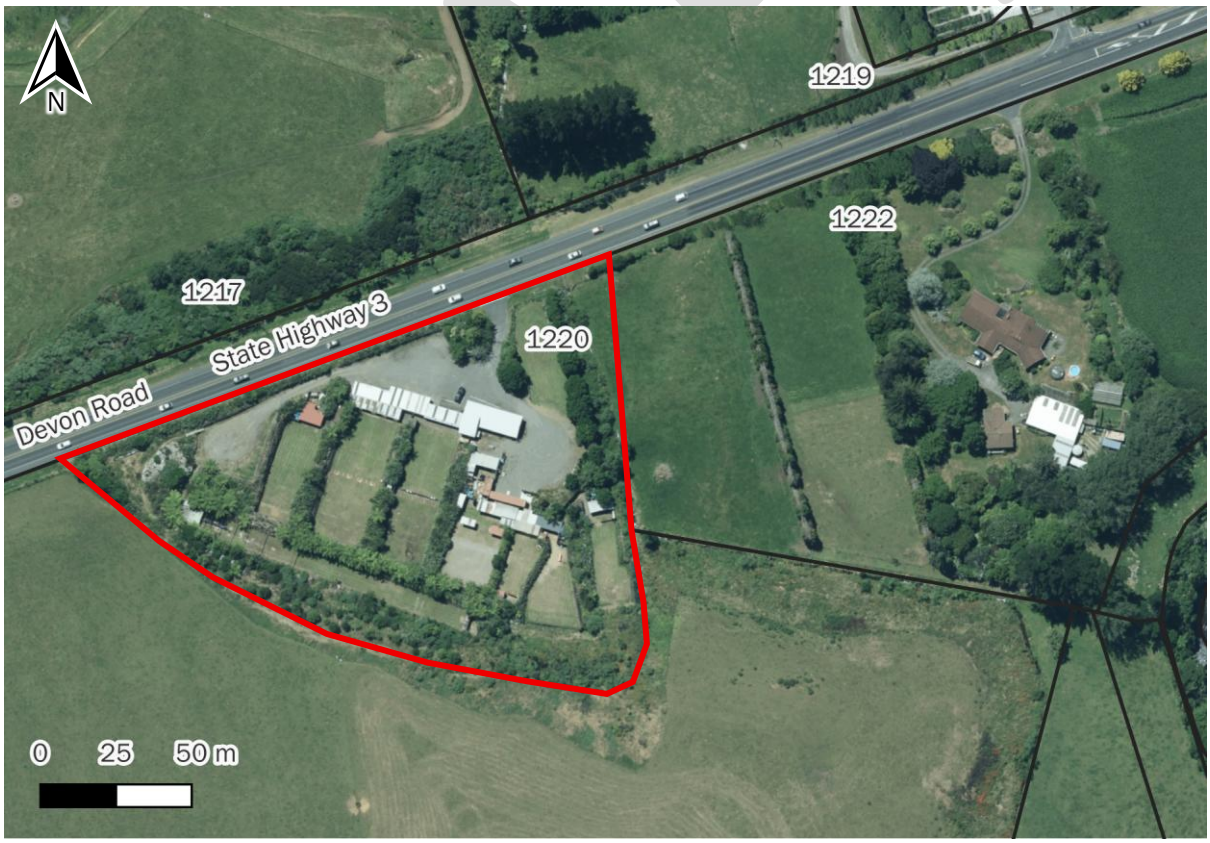

Figure 1.1 – Site location and neighbouring dwellings to the east

Managing noise received in the vicinity of these dwellings is the key focus of this NMP. If new dwellings are constructed elsewhere nearby the site in the future, this NMP should be updated to also specifically address those dwellings also.

1.2 Purpose

The purpose of this NMP is to identify, require, and enable the adoption of the best practicable option to ensure that noise emissions and associated adverse effects are minimised. It is also to enable compliance with Section 16 of the Resource Management Act 1991.

Section 16 of the Resource Management Act is deemed appropriate and is partially reproduced below:

> **16 Duty to avoid unreasonable noise**
>
> *(1) Every occupier of land (including any premises and any coastal marine area), and every person carrying out an activity in, on, or under a water body or the coastal marine area, shall adopt the best practicable option to ensure that the emission of noise from that land or water does not exceed a reasonable level.*

The purpose of this NMP is also to ensure compliance with [the relevant Conditions of the Resource Consent] under which the Club operates. These Conditions are as follows:

- [To be completed]
- [To be completed]
- [To be completed]

1.3 Methodology

Minimisation of noise emissions and associated adverse effects will be achieved by:

- Implementing physical mitigation to reduce gunshot noise.
- Verification measurements of the effectiveness of physical mitigation.
- Limiting the hours within which the Club can be used.
- Limiting the number of days on which shooting occurs.
- Monitoring the number of users at the Club each day.
- Developing and implementing strategies as set out in this NMP.
- Monitoring and reporting on the effectiveness of the mitigation measures implemented in the NMP.
- Identifying and implementing alternative or new mitigation measures wherever necessary on an annual basis to ensure the NMP's continued effectiveness and promote continuous improvement.

All those who discharge firearms on the site must be made familiar with the procedures set down in this NMP, and will be required to abide by these procedures to ensure that noise does not unreasonably disturb neighbours.

The process and responsibilities for inducting users onto the site, briefing them on the noise sensitivity of the site, and providing them with a copy of this NMP for review, will be as follows:

- Upon first use of the club, all members will be taken through an induction by the [insert appropriate Club Officer]. This induction will include review and explanation of this NMP, along with the Range Standing Orders which outline when and where each type of permitted firearm can be used on each Range.
- Every two years thereafter, each member will be reinduced, via the same process to ensure their knowledge remains fresh and up to date.

Appendix A of this NMP shall be maintained as a record of those inducted and permitted to discharge firearms on the site.

2.0 NOISE CONTROL MEASURES

The following mitigation and management measures are to be adopted to ensure the noise impacts on neighbouring dwellings are minimised as far as practicable.

2.1 Physical mitigation

As part of the Resource Consent under which the Club operates, the following physical mitigation measures were implemented:

- Range 1 was shifted to the west, away from Mangaoraka Stream.
- A series of 20 foot containers were stacked two containers high to the east of Range 1, with a roof structure reaching up to 7.8 metres – the sloped side of the roof facing away from Range 1. Gaps between container stacks have been welded closed.
- A 7 metre high acoustic fence was built between Ranges 1 and 2, extending to the back of Range 1.
- An additional 40 foot container was stacked on top of the original container behind Range 4, and two other stacks of 40 foot containers were placed to the east and west of the original container. These have a roof structure reaching 7.8 metres high, with the sloped side of the roof facing away from the ranges. An acoustic wall was also installed above a gate between two of the stacks of containers.
- A 1.5 metre high acoustic fence was constructed above the bund between Ranges 3 and 4.
- A new two storey club building was constructed behind Ranges 5 and 6, blocking the line of sight to 1222 Devon Road dwellings from all shooting positions. On Range 5 shooting bays have a solid partition on each side of the bay and roof above, all lined with minimum NRC 0.6 noise absorbing material. The partitions extend 1.5 m in front of the shooting position, and the distance between partitions is 2 metres.
- A series of containers (a combination of 20 foot and 40 foot) including a roof structure extending to at least 7.8 metres high was placed along the eastern side of Range 5, and a 7 metre high acoustic fence was built between the row of containers and the Club building. Gaps between container stacks have been welded closed.
- Two 40 foot containers were stacked and placed halfway down Range 6 on the eastern side. The containers have a roof structure reaching 7.8 metres high, with the sloped side facing towards Range 5 and the vertical side facing towards Range 6.
- Al gaps in the 3 metre high fence behind Range 7 have been filled to achieve acoustic specifications.

This mitigation is illustrated below in figure 2.1.

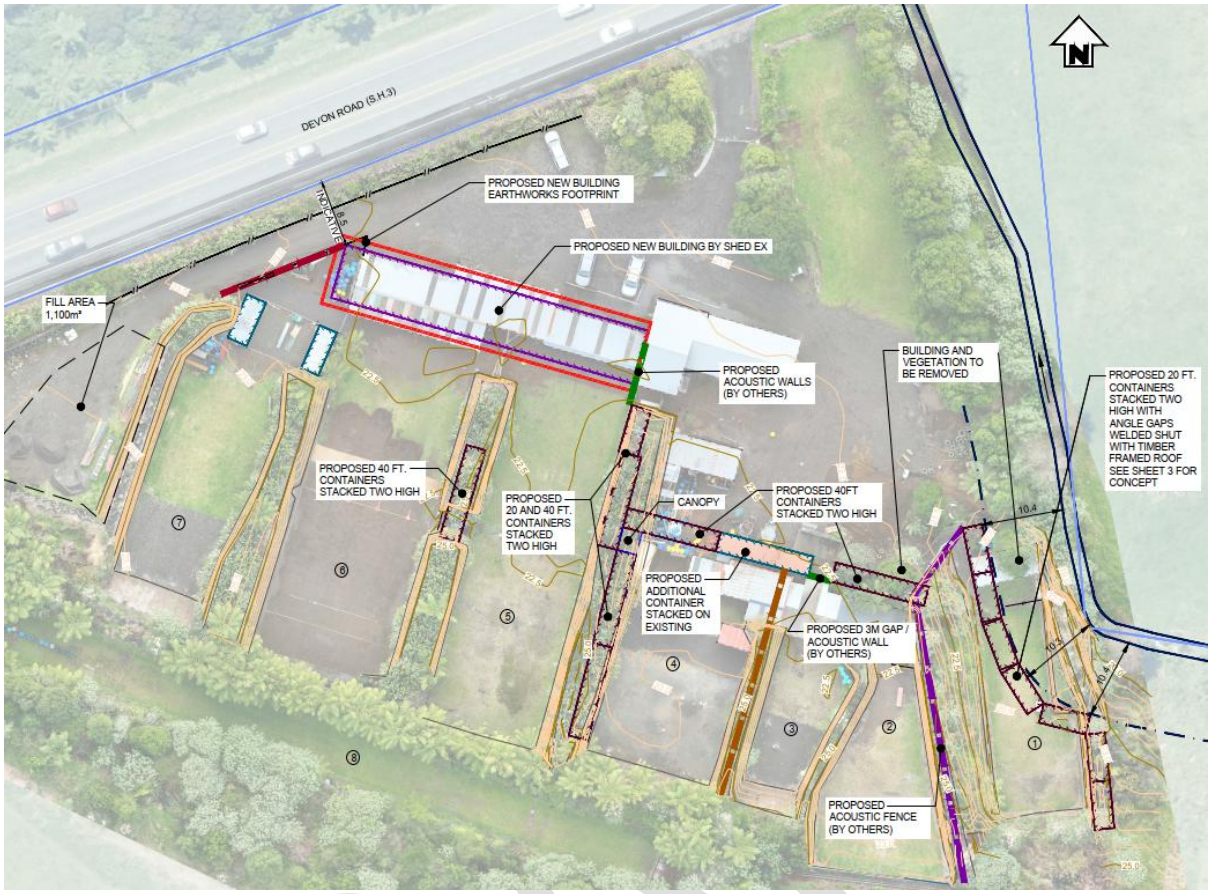

Figure 2.1 – Physical mitigation measures

These measures are expected to reduce noise levels at the neighbouring dwelling to the east in the order of 7 – 16 dB. It is therefore important that they are maintained in good condition, with no gaps, cracks, subsidence and the like.

This physical mitigation work is to be completed progressively following the grant of Consent, as Club time and resources allow. Shooting may commence on any Range, in accordance with the granted Consent and this Noise Management Plan, when all relevant mitigation has been completed for that Range. Confirmation should be sought from an Acoustic Engineer that the works relevant to any particular Range are sufficiently completed, so that use of that Range can commence and/or how the facility must be operated generally when mitigation is particularly complete, to ensure compliance with the CNR 90 requirement outlined below.

The person responsible for periodic inspection of these key physical mitigation measures is the Maintenance Officer, which is a new position to be established via the Club Constitution Inspections shall be carried out at least every 12 months, a record of observation and any actions kept in Appendix B of this NMP, and reported by the Maintenance Officer to the Club Committee

2.2 Restrictions on firearms

Each Range is subject to a set of Range Standing Orders, which set out the only types and calibres of firearms which may be discharged on that Range. The Range Standing Orders are issued in conjunction with the New Zealand Police, and are ultimately the responsibility of the Club President.

The person responsible for enforcement of the Range Standing Orders is the Club President.

2.3 Hours and intensity of use

As outlined in [Condition X], firearms may only be discharged at the Club between 0900 and 2100 hours. Within this time range, the Club is required to provide seven continuous 4 hour periods of low or no noise per week.

A period of 'low or no noise' is defined as a period where any outdoor shooting is restricted to range/firearm combinations which produce a noise level of 55 dB L_{AFmax} or less at the notional boundary of the 1222 Devon Road secondary dwelling. Firearm types that are permitted to be used, and ranges on which they can be used within these times are restricted to the following:

- .22 Rifles on Ranges 2 – 8
- .223 Suppressed Rifles on Ranges 1 – 8
- Supressed Centrefire Rifles Range 8

Other firearm types may also be assessed and added to the above list if it can be demonstrated that they will produce a noise level of 55 dB L_{AFmax} or less at the relevant noise receiving location by an acoustic engineer. Relevant information will need to be submitted by the Club to the acoustic engineer to allow an appropriate assessment, otherwise the noise levels will need to be verified by noise monitoring during a time outside of the quiet hours, and this NMP updated with any outcomes.

The Club must plan and notify quiet periods at least one week in advance on the Club website, at the following link:

https://www.newplymouthpistolclub.org.nz/events/

The Club shall also consult with any relevant neighbours, and agree to notify them by some other practicable method, if that is their preference. This NMP shall be updated to reflect any further agreement.

Quiet periods will also be notified on a notice board at the Club, so that all users of the Club are aware of those periods, even without checking the Club website. If firearm types other than those listed above are used during any period of 'low or no noise', the Club member responsible will be stood down for one week. If the same person is found to use an unapproved firearm during those periods on more than three occasions their membership will be permanently suspended.

The person responsible for managing the quiet hours process, and for ensuring the website is up to date is the Club Secretary.

2.4 Periodic noise monitoring to be conducted by an acoustic engineer

Periodic noise monitoring will be completed as required by [Condition X] to verify that the physical mitigation is as effective as expected, to identify ongoing opportunities for further mitigation, and to ensure that gunshot noise levels do not increase over time.

Within [X months] of the completion of the physical works outlined in section 2.1 above, and then periodically thereafter as required by [Condition X], the Club will engage an acoustic engineer, who will undertake an attended noise measurement campaign, adhering to the following general procedures:

- A total of six noise loggers will be deployed at the locations shown below in figure 2.2 (subject to access being granted).
- Shooting will be carried out on each Range with four different firearm types. A range of ammunition sizes are to be used including 0.22, 9 mm, 0.38, and 0.44 calibre ammunition.
- At least ten shots from each firearm / ammunition type shall be measured at relevant shooting locations on Ranges 1 – 7 will be measured.

- The measured L_{peak} and L_{AFmax} noise levels will be compared with those reported during the Resource Consent processes, and with those measured during any subsequent monitoring. This NMP shall be updated to reflect any substantive findings or recommendations as to improvements in physical mitigation, or management of firearms or ammunition types and the like.

Figure 2.2 – Noise measurement locations

The person responsible for engaging an acoustic engineer to complete this monitoring will be an elected Officer. A record of the dates the measurements were completed, the date and reference of the subsequent report, and any resulting actions or updates to this NMP shall be kept in Appendix C of this NMP.

2.5 Monitoring of Composite Noise Ratings to be conducted by the Club Noise Monitoring Officer

As outlined in [Condition X], the Club must not exceed a Composite Noise Rating (CNR) on any day (apart from the two exemptions outlined in section 4.0 below). This CNR value is expected to be readily achievable when physical mitigation outlined in this NMP has been implemented, however may require management on days with more intensive shooting or use of louder firearm types. The CNR will be calculated as follows:

$$CNR = (Y - A) + 10 \log_{10} N + 10 \log_{10} T - 12$$

where:

Y is the log average L_{Zpeak} level of the 25 loudest gunshots occurring that day

A is 13, which is the most pessimistic 'community adaption factor' allowed by the method

N is the number of gunshots occurring that day

T is the proportion of the 'daytime' period in the underlying District Plan noise limits, represented by the period between when the first and last shot is fired on the day

For planned Club activities, a CNR value will be calculated in advance by the Club Noise Monitoring Officer using the spreadsheet *Copy of CNR scenarios 30_10_2024_for comment.xlsx* prepared by Acoustic Engineering Services dated the 30th of October 2024, based on the times between which there will be shooting, the ranges and types of firearms used, and an estimated maximum number of shots.

More generally, the Club will track who is shooting, on what ranges and when via a swipe card access to each Range, which is linked to management software such as Hello Club.

To ensure that casual Club use is appropriately controlled, an initial survey over three weeks shall be conducted using Hello Club access data to establish how many shots an average Club member typically fires during a 'casual use / training' visit to the Club. Each member will be required to log how many shots they fired, and what ammunition type over this three week period. Based on this, an alert level will be set in terms of 'number of Club member visitors per day' via the Hello Club system, such that club officials are alerted if the number of visiting members in a day meant it was possible the combined number of shots is approaching 2,500. Once this has been carried out, this NMP will be updated with the maximum number of users per day before an alarm is triggered.

Apon receiving an alert triggered by the threshold number of members attending the club, Club Noise Monitoring Officer will then conduct a more detailed review based on the Hello Club information as to who specifically had accessed the site and the types of shooting they are known to participate in, to determine if in fact there was any risk of the CNR 90 level being approached on that day. If the CNR is found to be approaching 90, a message will be sent to Club members via the Hello Club App to ensure that no other members access the Club on that day. Swipe card settings will then be adjusted, to physically prevent access for those periods. On days where planned Club activities will also happen, the threshold will be reduced for that day.

The person responsible for establishing and maintaining the Club processes relating to CNR, documenting and maintaining a record of calculated CNR levels, and where relevant expanding or amending this section of the NMP will be the Club Noise Monitoring Officer.

The Club will also monitor noise levels using a Sensica HD2011 Class 1 Noise Level Meter (or similar) set up to log the number of shots and record peak noise levels at the noise logging location shown in orange figure 2.2 at a height of 3 metres above the ground. The noise levels will be uploaded and stored on a cloud storage service, and can be used by the Club to calculate indicative CNR values. The data would also be made available to the Council on request so that the CNR value for any given day can be verified independently.

3.0 POLICE AND AOS USE

Police and Armed Offenders Squad (AOS) use of the Club occurs regularly, and shall comply with the requirements of this NMP other than in circumstances related to an emergency.

4.0 EVENTS

The Club hosts many events, which will generally be managed and comply with the above noise management processes, and the CNR 90 requirement.

However, in accordance with [Condition X], up to two times per year the Club is permitted to hold a three-day event where there is no CNR restriction. These events are to be published on the Club website at least one month prior to the event. There is to be no shooting at the Club for three days before such an event.

5.0 MANAGEMENT PROCEDURES

A Club member shall be appointed as a Noise Management Officer. This person will be responsible for implementation of the NMP and ensuring the mitigation strategies outlined above are adopted by all those discharging firearms at the Club.

The Noise Management Officer will also have the following responsibilities:

- Ensure all members and Club users are aware of the instructions contained in the NMP and of their responsibilities to control noise emitted from the Club.
- Ensure a copy of the NMP is made available to all Club members, and that a hard copy of the current document is at the Club at all times.
- Keep a record of the groups using the Club facilities, and the dates/times that the Club was used by each group.
- Receive and investigate complaints and keep an updated record of complaints in Appendix D of this NMP.
- Discuss noise impacts and mitigation measures with members that have atypical firearms.
- Notify the Council's Senior Monitoring Officer, or his/her delegate within 48 hours of any complaint regarding noise from activities on the site, and advise of action taken to remedy or mitigate the cause of the complaint.

The Noise Management Officer shall also act as the nominated local residents' liaison person who is available at all times. The function of the residents' liaison person shall be to respond to any complaints in relation to the effects of the exercising of this consent. The local residents' liaison person shall endeavour to deal with any issue immediately.

Noise Management Officer:

Name:	[Club to complete – first name only]
Contact Phone Number:	[A cell phone number will be inserted here]
Hours of Contact:	0900 – 2100 hours

Club members are to be made familiar with this document whenever it is updated, or when they join the Club.

6.0 COMMUNITY RELATIONS AND COMMUNICATION

It is essential that consideration is given to those likely to be affected by noise from activities associated with New Plymouth Pistol Club. The value of maintaining community goodwill should be emphasised to all members. Periodically the issue of community goodwill should be raised at Club meetings, and the benefits of maintaining a good relationship with the community examined, along with the consequences of a deteriorating community relationship.

6.1 Communications

Neighbours of New Plymouth Pistol Club are to be given contact details including telephone numbers of the Noise Liaison Officer that they can use if they have any concerns regarding noise. This applies to the neighbours at 1222 Devon Road, as well as any developed directly across State Highway 3 / Devon Road in the future.

6.2 Complaints register and reporting

Any complaints received shall be logged by the Noise Liaison Officer and appropriate action shall be taken. The date and time of the complaint, the name address and phone number of the complainant and details of the nature of the complaint shall be recorded, together with details of the action taken in resolving the issue, as shown in Appendix D below.

It will be the responsibility of the Noise Liaison Officer for investigating complaints and providing feedback to complainants in an appropriate timeframe. The Complaints Register shall be made available to any Council Officer at all reasonable times upon request.

6.3 Review

This NMP is a living document, and may be amended, changed or reviewed as required such that best practices are adopted, to ensure the purposes and objectives of the NMP are continually being met.

Any updates or changes to this NMP are required to be certified by the New Plymouth District Council before the changes are implemented.

7.0 ROLES AND RESPONSIBILITIES

This section is a summary of the responsibilities of the roles described in the sections above.

Maintenance Officer

- Inspection of physical mitigation

President

- Review of firearm types

Noise Management Officer

- Managing the quiet hours process

Noise Management Officer

- Management of acoustic monitoring, coordination with acoustic engineer

Noise Management Officer

- Establishing and maintaining Club processes relating to CNR

Noise Management Officer

- Responsibilities described in section 6.0

APPENDIX A – RECORD OF SITE INDUCTIONS

Name	Date	Club representative conducting the induction	Notes	Signature of inductee	Signature of Club representative

APPENDIX B – RECORD OF NOISE MITIGATION INSPECTIONS

Mitigation location	Date	Inspected by	Maintenance required	Maintenance carried out	Signature

APPENDIX C – NOISE MONITORING

Date	Measured by	Report number	Actions required

APPENDIX D – COMPLAINTS REGISTER

Complaints logged by	Date and time complaint received	Complaint received from (i.e. neighbours' details)	Details of complaint (i.e. source, type of noise, duration)	Action taken	Follow up / Additional comments

APPENDIX 2: Excerpt from Marshall Day Acoustics Report *Peak View Range – Noise Emission* dated 13 June 2023

Noise Levels Measured at Other Shooting Ranges

Marshall Day Acoustics has measured shooting noise at other ranges throughout New Zealand. This section reports noise levels measured at six ranges. Based on the measured data, noise levels have been calculated for the nearest receivers to the Peak View Range (taking into account estimated distance and topographical screening and using the relationships previously discussed).

Table 1: Summary of Noise Levels Measured at other Ranges

Club / Shooting Type	Firearm	Number of shots	Distance	Orient	Screening	dB L_{Aeq} LAeq is typically measured over a 15 minute period or some other representative time period			dB L_{AFmax}			Notes
						Measured	Calculated 2447 SH6	Calculated 156B LF Rd	Measured	Calculated 2447 SH6	Calculated 156B LF Rd	
Pistol Club 1	Competitive Pistols	Many (club competition)	279m	90^0	Limited	45	25	10	63	43	28	
Pistol Club 2	Wide range of pistols, rifles shotguns	Varies, often many	600m	180^0 to 210^0	Light shooting structure	41 – 46*	29 – 34*	14 – 19*	35 - 61	23 - 49	7 – 33	1
Hunting Club 1	Police pistol, rifles, shotguns	Varies	665m	180^0	No significant screening	41 – 43	29 – 31	14 – 16	50 - 61	38 – 49	23 – 34	
Clay Shooting Club	Large and small rifles, shotguns	Test shots, controlled shoot, practice shoot	560 to 710m	45^0	None	46 -49*	34 – 37 *	19 – 22*	51 - 63	39 – 51	24 – 36	2
Target Shooting Club	Pistols and rifle	Target shooting, many shots	700 to 800m	180^0	Yes at some positions, no at others	35 - 36	25 – 26	13 – 14	48 – 55	38 – 45	23 – 33	
Rifle Range	Various rifles	Test shots	650m	270^0	No	-	-	-	55 - 61	43 – 49	28 – 34	
RANGE of CALCUATED NOISE LEVEL based on Measured Levels							**25 – 37***	**10 – 22***		**23 - 51**	**7 - 36**	

Notes:

* An asterisk shows where the stated level was likely affected by ambient noise (e.g. wind, cars, etc). These levels are to be considered the upper level, shooting noise levels are likely somewhat lower.

1. Many measurements were carried out at this club over a number of years. Only one L_{AFmax} outlier was noted, that being when police training fired a large volley of simultaneous rounds. This practice should be avoided at Peak View Range

2. One measurement at 1100m showed an outlier L_{AFmax} when significant shotgun use was occurring. Conditions during that shoot likely involved highly enhanced sound propagation due to meteorological effects.

3. In some cases, the noise level relates to shooting clubs where the data is sensitive. For this reason, locations of the shooting clubs have not been included.

APPENDIX 3: Jon Styles Waitemata Gun Club evidence dated 4 February 2026

BEFORE THE AUCKLAND UNITARY PLAN INDEPENDENT HEARINGS PANEL

IN THE MATTER of the Resource Management Act 1991 and the Local Government (Auckland Transitional Provisions) Act 2010

AND

IN THE MATTER of Topic 080 – Rezoning and Precincts (General)

STATEMENT OF REBUTTAL EVIDENCE OF JON ROBERT STYLES ON BEHALF OF AUCKLAND COUNCIL

TOPIC 080 PUBLIC OPEN SPACE PRECINCTS

ACOUSTICS

4 FEBRUARY 2016

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1. SUMMARY

1.1 My full name is Jon Robert Styles. I am engaged by Auckland Council (**Council**) to provide evidence in relation to the noise provisions as part of the public open space precincts. This evidence responds only to the noise-related issues associated with the Waitemata Gun Club (**WGC**).

1.2 I have been involved in the assessment of noise from the WGC for approximately 3 years following numerous complaints to the Council about the noise emissions. I was not involved in the drafting of any of the PAUP rules relating to the WGC.

1.3 From the measurements undertaken by my company in 2013, it is my opinion that the noise emissions were unreasonable in terms of s16 of the Act, with noise levels up to CNR 121 and L_{ZPeak} 118dB a the most exposed receivers, (44 Burns Lane and 41 Pinetone Road respectively).

1.4 My company undertook further measurements from 41 Pinetone Road in November 2015 to determine whether or not the noise emissions had changed appreciably since 2013. Those measurements showed that the levels were substantially similar, with a slight increase in the average L_{ZPeak} levels for the periods measured. I am therefore of the opinion that the noise emissions as recent as November 2015 are also unreasonable in terms of s16 taking into account the frequency of events undertaken (as outlined in the evidence of Mr Coppins for the WGC).

1.5 I consider that the noise limits as notified in the PAUP will likely require such a reduction in the number of shots per day that the activity would be likely to become unviable for the WGC, with no more than 100 shots per day permitted, even with the uplift of 5 points to the CNR value as suggested by Mr Hegley for the WGC. If such a reduction in shots was viable, then I consider that greater certainty should be provided in the controls on the times and days when shooting is permitted.

1.6 I disagree with Mr Hegley that the reductions in noise level and CNR he suggests are practicable to achieve.

1.7 I consider that whilst District Plan provisions may be prepared to limit the main aspects of the activity to reasonable noise levels, I consider that carefully crafted resource consent conditions would be a better mechanism for the control of the noise effects and for the identification and adoption of the best practicable option for the activity.

2. INTRODUCTION

2.1 My full name is Jon Robert Styles. I am an acoustic consultant and director and principal of Styles Group Acoustics and Vibration Consultants. I lead a team of 5 consultants specialising in the measurement, prediction and assessment of environmental and underwater noise, building acoustics and vibration. I hold a Bachelor of Applied Science majoring in Environmental Health and I have completed the Ministry for the Environments' Making Good Decisions programme.

2.2 I have approximately 15 years' experience in the industry, the first 4 as the Auckland City Council's Environmental Health Specialist – Noise, and the latter 11 as the director and principal of Styles Group. In that time I have been involved in the development and administration of numerous District Plan rules, plan changes, general policy development and I have assisted a large number of Councils to process a significant number of resource consents subject to these rules. I have also been involved a large number of enforcement cases on behalf of various Councils where they have enforced the permitted activity controls where there has been no resource consent or other regularisation of the activity.

2.3 During the hearings for the Proposed Auckland Unitary Plan, I have presented expert acoustic evidence on behalf of Council in relation to Topics 027 Temporary Activities, 033/034 Coastal Zones and Precincts, 040 Lighting, Noise and Vibration, 041 Earthworks and Mineral, 042 Infrastructure, 043/044 High Land Transport Noise Overlay, 050 City Centre, and 076 Major Recreation Zones and Precincts.

2.4 I have been involved in the measurement and assessment of noise from the WGC for the Council since 2013 when my company was engaged to undertake a series of noise measurements from neighbouring properties and to provide an opinion on whether the noise generated was reasonable in terms of s16 of the Act. The request for the measurements and advice stemmed from a number of complaints about the noise from the surrounding community.

2.5 In late-2015 Styles Group was engaged by the Council to perform further noise measurements to help inform the Council on whether or not the noise emissions from the shooting remained similar to that assessed in 2013.

2.6 As a result of the above work I am very familiar with the WGC and the noise effects it generates.

2.7 I was not involved in drafting the notified provisions relating to the WGC.

3. EXPERT CODE OF CONDUCT

3.1 I confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2014 and that I agree to comply with it. I confirm that I have considered all the material facts that I am aware of that might alter or detract from the opinions that I express, and that this evidence is within my area of expertise, except where I state that I am relying on the evidence of another person.

4. SCOPE

4.1 I have been asked by the Council to provide rebuttal evidence to:

(a) Provide additional information regarding matters referred to by Ms Juliana Cox in her primary and rebuttal evidence; and

(b) Respond to the submission and primary evidence of WGC, in particular the evidence of Mr Nevil Hegley, the WGC's acoustic consultant.

5. THE WGC

5.1 I understand that the WGC is one of the New Zealand's largest clay target clubs. Notwithstanding the long history of the club at this site, the surrounding area has changed from a predominantly rural area to one comprising considerable residential activity with numerous residential dwellings now within 500m from the club, with the notional boundary[1] of the dwelling at 41 Pinetone Road being only 200m from the nearest shooting stand. I understand that numerous complaints from nearby residents have been received by the Council.

5.2 The shooting stands are generally oriented to face southwest, and are screened from the nearest dwellings in that direction by a stand of pine trees. The pine trees provide no appreciable attenuation of the noise levels from the WGC.

5.3 The intensity of the activity on the WGC site is set out in detail in the evidence of Mr Hay and Mr Coppins for the WGC. On the days that Styles Group has undertaken noise measurements of its activities, many thousands of shots have been discharged over the day. The noise measurements show that at times during

[1] A line 20m from the façade of the dwelling or the legal boundary of the site, whichever is closer to the dwelling

the day there appears to be short breaks in the shooting, presumably for lunch breaks but possibly for other reasons.

6. COMPOSITE NOISE RATING (CNR)

6.1 To preface the discussion of noise levels from the WGC I have prepared a basic summary of the CNR metric. The CNR noise measure is different from the normal L_{Aeq} metric and, for the reasons discussed below, should be used to measure gun fire noise.

6.2 The noise limits applying to the WGC as set out in the Operative Rodney District Plan and in the underlying zone rules in the notified PAUP provisions utilise the L_{eq} and L_{Aeq} noise level metrics and are based on the 1999 and 2008 versions of NZS6802 respectively. Gun fire noise is specifically noted to be outside the scope of all recent revisions of this standard. I agree with Mr Hegley that the use of the L_{Aeq} metric alone as utilised in the underlying zone rules is inappropriate for the measurement and assessment of gun fire noise.

6.3 In many cases in New Zealand, the CNR metric has been used for the assessment of noise from gun fire.

6.4 The CNR metric is primarily a function of the noise level of each shot, the number of shots per day and the proportion of days per year that shots are fired, (amongst other variables). Previous studies[2,3] concerning the investigation of gun fire noise recommend a limit of CNR 90.

6.5 The Australian National Acoustics Laboratories[4] (**NAL**) produced two relevant reports assisting the assessment of gunfire noise effects on communities. I have reviewed both of the NAL reports (upon which the proposed limit of CNR 90 is based) as part of this assessment as well as on other projects. It is my opinion that neither of the reports shows clear or robust reasoning for adopting the value of CNR 90. In fact, the Carter report[2] states throughout that many aspects of the equations are assumed only and have been included without evaluation against any dose / response evidence. Indeed, the element of the equation dealing with the number of days per annum when shooting may occur has been added as "*In the absence of anything better...*". I consider that the CNR metric has some merit but there is a severe lack of information to support the value of 90 as being reasonable.

[2] Hede, A., Bullen, R. (1981). Community Reaction to Noise from the Hornsby Rifle Range. NAL Report No. 84.
[3] Carter N.I., (1977). A Method for Evaluating Community Response to Noise from Military Firing Ranges. NAL Report No.67.
[4] http://www.nal.gov.au/

6.6 Notwithstanding my own opinion, I note that the CNR metric has been implemented in numerous cases both in New Zealand and abroad and that the basis of the equation appears relatively sound, and on this basis the use of this metric is acceptable in the case of the WGC and can be used to assist in the assessment of effects along with reference to the other relevant noise measurement metrics.

6.7 The CNR noise limit should not be the sole determinant of a noise limit, and the L_{ZPeak}, L_{Amax} and L_{Aeq} levels should all be considered in the process of arriving at a limit.

6.8 As set out in the evidence of Mr Hegley, the CNR level is calculated using the equation:

$$CNR = (Y - A) - 12 + 10\log N + 10\log R + 10\log T$$

Where:

- *Y* is the log average L_{ZPeak} level for all shots over the day;
- *A* is the degree of community adaptation (set conservatively at 13 for no adaptation);
- *N* is the number of single shots a day;
- *R* is the number of rounds per burst (set at 1 in this case); and
- *T* is the proportion of days per annum that shooting occurs (set at 0.712 in this case for activity occurring 5 days a week).

6.9 For the purpose of this assessment, the variables derived from the measurements Styles Group has undertaken are Y, (the log average L_{ZPeak} level of the shots) and N, (the number of shots over the day). All other inputs are fixed at the values described above.

Number of shots per day

6.10 The number of shots per day is extremely difficult to count from the measurement information and so must be estimated. We have derived the following equation to estimate the number of shots per day:

$$\sum_{i=0} n \left(10^{\wedge \frac{SEL_x}{10}} \Big/ \frac{10^{\wedge \frac{SEL_i}{10}}}{\propto} \right)$$

Where:

- *n* is the number of shots per individual 15 min period
- *SELx* is the Sound Exposure Level of 1 specific 15 min period
- SEL_i is the Sound Exposure Level of reference 15 min period
- *α* is the number of shots counted in reference 15 min period

6.11 Based on this equation and the 2013 noise level measurements the number of *noisy* shots that would control the CNR level over a day is estimated at 2782 for 41 Pinetone Road and 7184 for 44 Burns Lane. The quieter shots do not influence the CNR level so can be ignored. The higher number at Burns Lane reflects the smaller variation in the measured level between each shot due to the orientation of the shooting fields to the receiver at Burns Lane, whereas 41 Pinetone Road is at one end of the fields so receives a smaller number of noisy shots.

6.12 Notwithstanding the above estimations, we understand that up to 19000 shots (in total) have been reported by residents on other days.

7. 2013 NOISE MEASUREMENTS

7.1 A series of noise measurements were undertaken under my direction by Dr Matt Pine of Styles Group from several surrounding receivers in the area in July and September 2013. Noise measurements were undertaken using Brüel and Kjaer precision integrating sound level meters, pre-amplifiers and microphones all meeting IEC651 Type 1 accuracy specifications. The instruments were field-calibrated before and after the measurements.

7.2 The weather during all measurements was calm, with little wind (< 5 ms^{-1}), and no precipitation. Given these conditions no adjustments for meteorological effects were necessary.

7.3 The ambient noise environment during the measurements was intermittently controlled by aircraft, birdsong, insect noise and traffic noise from Oraha Road, Old

North Road and the distant State Highway 16. For the vast majority of the time, the measured levels were completely controlled by gunfire from the WGC.

7.4 The noise measurements were undertaken in accordance with NZS6801:2008 *Acoustics - Measurement of Environmental Sound* at the locations shown in Figure 1.

41 Pinetone Road

7.5 The notional boundary of 41 Pinetone Road is approximately 200m from the nearest shooting stand. Attended noise measurements were undertaken from this site on July 20th at 11am – 12pm. Unattended noise measurements were undertaken on September 8th at 10.26am – 11.42am, September 21st 8am – 6pm and September 22nd 8am – 4pm. The WGC were hosting a competition over the weekend of September 21st and 22nd.

44 Burns Lane

7.6 The notional boundary of 44 Burns Lane is approximately 650m from the nearest shooting stand. Unattended noise measurements were undertaken from this site on September 21st at 8am – 6pm and September 22nd 8am – 4pm.

86 Burns Lane

7.7 The notional boundary of 86 Burns lane is approximately 270m from the nearest shooting stand. Attended measurements were undertaken from the site on July 20th 12.19pm – 1.09pm and September 22nd 3pm – 3.43pm.

165C Oraha Road

7.8 The notional boundary of 165C Oraha Road is approximately 520m from the nearest shooting stand. Attended measurements were undertaken from the site on July 20th 1.28pm – 1.53pm and September 8th 10.40am – 11.30am.

7.9 At all sites, attended measurements were used to supplement longer term data collection by means of acoustic loggers and to improve the analytical accuracy of logger data.

7.10 Where unattended measurements were carried out, the sound was also recorded for later playback and analysis. This meant that gunfire could be clearly heard and

defined in the recordings and corroborated with the observations made from other locations.

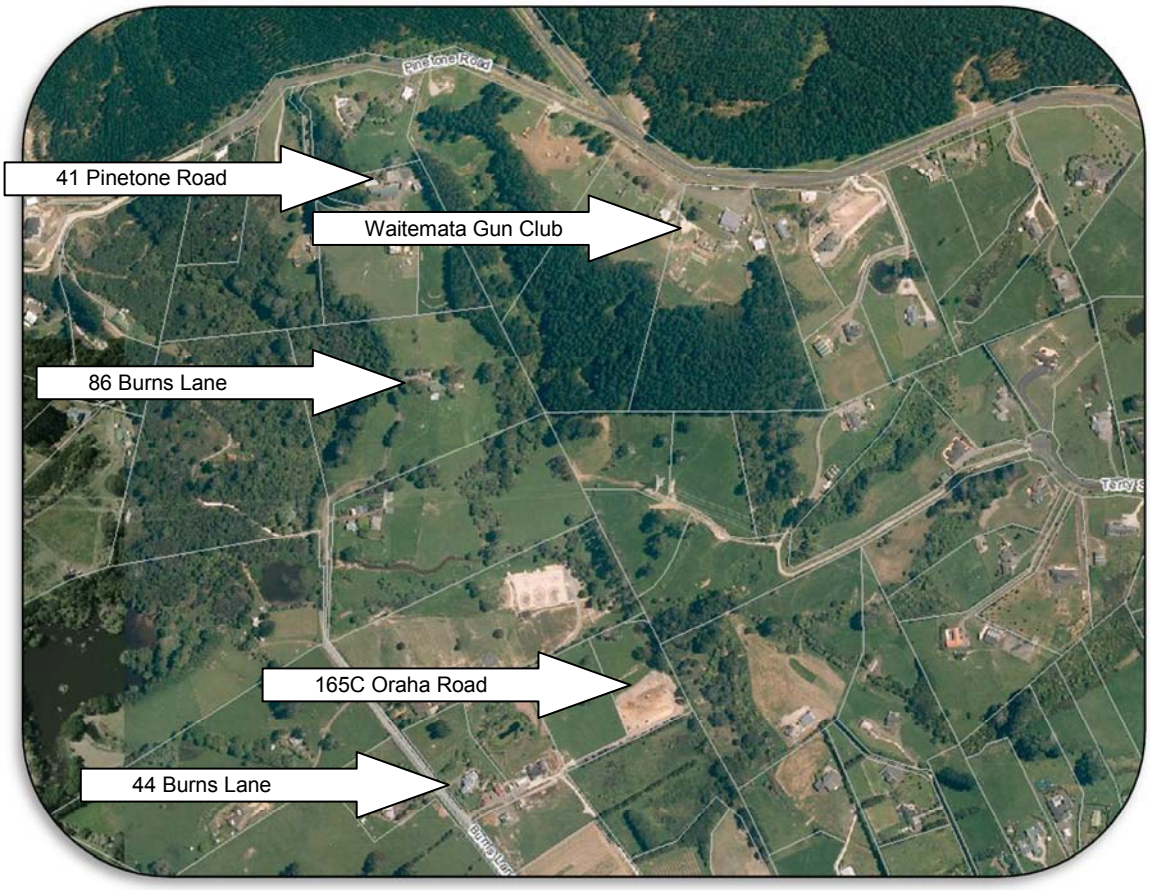


Figure 1: Site map showing locations where noise measurements were taken and the WGC

7.11 Importantly, the measurements undertaken represent only a snapshot of the activities on the site. We spent considerable time planning the measurements to coincide the busiest days at the WGC with good weather conditions suitable for measuring noise, but we cannot be sure that we have measured the busiest day of the year; indeed it is unlikely that we did. Notwithstanding, the measurements are sufficient for describing the noise environment on the days we measured, and there is sufficient data to provide an assessment for a variety of scenarios involving more or less shots in the day. Most importantly, the results are sufficiently robust for the purpose of assessing what a reasonable level of noise from the WGC might be.

7.12 The noise levels reported below in Table 1 have been derived from the measurements undertaken. The levels presented below are only a summary of the measurements. Charts showing the log average L_{ZPeak}, the L_{Aeq} and the highest

L_{Amax} levels for each 15 minute period for 41 Pinetone Road and 44 Burns Lane locations are presented in **Appendix 1**.

7.13 The extremely large number of shots in a day presents some challenges in the analysis of measurement results.

7.14 The L_{ZPeak} levels for each individual shot have not been determined in this case due to the large amount of time it would require. Notwithstanding, I consider that for the purpose of describing the general adverse effects, our analysis is sufficiently robust.

7.15 The noise measurement results are presented in terms of L_{Aeq} levels and also the L_{ZPeak} descriptor. The latter is required for the calculation of the CNR value. The logarithmic average L_{ZPeak} level has been calculated from the same time period as the L_{Aeq} value presented alongside. Whilst this is not strictly the same as the logarithmic average over a whole day, we note that the log average is not particularly sensitive to the introduction of more events at a lower noise level as it is the highest L_{ZPeak} values that control it, and therefore the log average over the day would be little different.

Receiver	Date	Log average L_{ZPeak} dB	Highest 15min L_{Aeq} dB
41 Pinetone Rd	21 Sept 2013	108	66
44 Burns Lane	21 Sept 2013	103	67
86 Burns Lane	20 Jul 2013	96	50
165C Oraha Rd	8 Sept 2013	99	56

Table 1: Summary of measured noise levels at the notional boundary of each receiver.

7.16 Importantly, I note that the noise environment at all of the receivers was completely dominated by gun fire noise from the WGC when shooting there was underway.

7.17 Using the underlying zone provisions as a comparison, the L_{Aeq} noise levels reached as high as 72dB for the loudest 15 minute period and L_{Aeq} 67dB average over the day once the 5dB adjustment for the noise containing special audible character is included. Whilst the L_{Aeq} metric is not ideal for the assessment of gunfire noise, I provide this comparison to show that the levels would be up to 12dB higher than the underlying zone control of L_{Aeq} 55dB based on these measurements.

7.18 Based on the CNR equation and using the logarithmic average L_{ZPeak} level and estimated number of shots that would control the CNR for each receiver, I have calculated the following CNR levels:

41 Pinetone Road	CNR 119
44 Burns Lane	CNR 121

8. 2015 NOISE MEASUREMENTS

8.1 The Council engaged my company to undertake further noise levels measurements in late 2015 to determine whether the noise levels had changed appreciably since 2013.

8.2 Attended noise level measurements were undertaken on the morning of Saturday the 7th November and after midday on Sunday the 8th of November from the notional boundary of 41 Pinetone Road.

8.3 The weather conditions were similar to those encountered during the 2013 measurements and no adjustments for meteorological conditions were necessary. All noise level measurements were undertaken in accordance with the same standards and using the same equipment and methods as the 2013 measurements.

8.4 The L_{Aeq}, L_{ZPeak} and L_{Amax} noise levels are plotted using dashed lines against the 2013 noise measurements from the same property in **Appendix 1** to my evidence. The results show that the noise levels for the periods measured are substantially similar, if not 1-2dB higher than those undertaken in 2013. In my view, the 2015 measurements show that in terms of the peak and maximum level for each shot, there has been no appreciable change over time.

8.5 Since only a part day was measured in each instance, it is not possible to determine a CNR value for those days. If shooting continued for the full day as it did for the 2013 measurements, I expect that the CNR values in 2015 would be very similar.

9. ASSESSMENT OF THE CURRENT NOISE EFFECTS

9.1 The CNR values derived from the Styles Group measurements are very high compared to levels of no higher than 90 which are considered *reasonable* for other cases in New Zealand. In some instances a lower CNR value has been applied to some firing ranges reflecting different receiving environments, the practicability of reducing the noise source levels and that in some cases the range might be new to

the area. The values of 119 and 121 measured here are considered to be excessively high.

9.2 In this case, not only is the number of shots per day very high compared to other firing ranges I have been involved in, but the L_{ZPeak} levels are also very high due to the very close proximity and lack of screening of the closest receivers. Commensurate with the high L_{ZPeak} levels are high L_{Amax} and L_{Aeq} noise levels. As shown in **Appendix 1**, the noise levels increase considerably with the onset of shooting in the morning at the WGC for both receiver locations. The L_{Aeq} levels regularly reach 65dB and higher and L_{Amax} 90dB during the day at both locations; both controlled completely by gun fire. This is compared to the typical measured background level of L_{A95} 42dB. These levels are considered to be very high for this type of noise and would in my opinion justify a high level of annoyance in the community.

9.3 I note that even acknowledging the uncertainties associated with the quantification of the number of shots fired over the day and the degree to which the quieter shots are relevant when determining the CNR value, resolving these uncertainties will not change my opinion on the degree of effects. This is primarily because the noise level from the gun fire is so high and because resolving any uncertainties will not give rise to any appreciable change in the CNR input values such that the CNR will approach a reasonable level. I therefore consider that the methods adopted in this assessment for determining the CNR values and the degree of effects is sufficiently robust for the purpose.

9.4 For practice days and days when there is less shooting, the L_{ZPeak} levels will be similar to those measured on competition days at approximately 108dB and 103dB at 41 Pinetone Rd and 44 Burns Lane respectively, but the L_{Aeq} and CNR values will reduce due to the lower intensity of shooting over the day. The L_{Aeq} level will drop by 3dB if the number of shots in a day is halved.

9.5 Overall, it is my view that the noise emissions in 2013 and in 2015 are *unreasonable* in terms of s16 of the Act for the receivers where measurements have been undertaken and will also be for numerous others around the WGC also.

9.6 It is my opinion that the noise levels are unreasonable whether or not the receivers were there first or came to the noise. That is not to say that I have discounted such

a consideration, but rather that the levels in this case are so high that I consider that they are unreasonable in either situation.

10. RELATIONSHIP BETWEEN CNR AND NUMBER OF SHOTS

10.1 **Appendix 2** to my evidence shows the relationship between the number of shots in a day and the resulting CNR value based on the average L_{ZPeak} level being 108dB (as measured at 41 Pinetone Road).

10.2 Inspection of these two curves will show the number of shots permissible in a day to meet any given CNR value as assessed at 41 Pinetone Road.

11. NOTIFIED PAUP RULE

11.1 Rule xx states the following:

> *1. The gun cartridge loads must not exceed 12 gauge or 28 grams of shot.*
> *2. All shooting activity within the facility must be conducted to ensure that gunshot noise does not exceed a composite noise rating (CNR) of:*
> *a. 95 at the intersection of the western boundary of the 465 Old North Road (the site) with Pinestone Road*
> *b. 90 at the intersection of the boundaries of 465 Old North Road, 41 Pinestone Road and 86 Burns Lane*
> *c. 85 at the intersection of the boundaries of 465 Old North Road, 451A Old North Road and 45 Terry Smyth Drive*
> *3. The noise must be measured in accordance with the requirements of NZS6802:2008 Acoustics – Environmental Noise.*
> *4. Development that does not comply with clause 3.2 is a restricted discretionary activity.*

11.2 The locations specified in (a) and (b) are both further away from the WGC shooting stands than the measurement position adopted for 41 Pinetone Road in both the 2013 and 2015 measurements. The 2013 assessment showed that a CNR of 119 was measured at this property. If the noise was measured at the assessment location in (b), the CNR at 41 Pinetone Road and would be higher.

11.3 I am not sure why the notified rule refers to locations other than receiver locations. Using these locations as the reference point does not help to describe the effects on the receivers which in some cases are closer. I note that locations (b) and (c) both require access to private property for the purpose of measurement and are both located very close to trees that will be likely to have an effect on noise

measurements on days when there is even a small amount of wind blowing. I consider that there are other more suitable and appropriate locations that could be used, including the notional boundary of any dwelling.

11.4 For these reasons I have used 41 Pinetone Road as the most relevant and closest receiver location. I note that the CNR values at 44 Burns Lane are higher again than at this location.

11.5 With reference to **Appendix 2** to my evidence, it can be seen that to meet a CNR value of 90 at 41 Pinetone Road, the number of shots would be restricted to approximately no more than 8 per day.

11.6 To meet a CNR value of 95 at the same location, the number of shots would be restricted to no more than 25 per day.

11.7 To meet a CNR value of 100 at the same location, the number of shots would be restricted to no more than 80 per day.

11.8 Such a restriction on the number of shots is significant compared to the many thousands that are discharged on a regular daily basis at the moment. I understand that such a restriction would without question mean it would be unviable for the club to operate.

11.9 There are multiple problems with the notified rule, including the specification of arbitrary measurement positions that do not directly relate to the effects on receivers. The CNR values are so low that compliance would render the clubs operation unviable. Even if 5 points were added to the CNR values, compliance would still make the operation unviable.

11.10 Notwithstanding that compliance with the notified rule would reduce the number of shots per day by a drastic margin, the L_{ZPeak} noise level for the receivers would still average 108dB for those shots. I consider this level to be very high.

11.11 If the WGC did accept a control of CNR 90 or 95 and the associated drop in the number of shots permissible, I would consider the noise levels to be reasonable under section 16 provided that there was greater certainty in the times and days that the shots could be fired. The very high L_{ZPeak} level remains of concern to me and it is for this reason that the certainty would need to be increased.

11.12 The notified rule also lacks the controls I consider appropriate for an activity that generates a high level of noise effects, such as provisions for advising neighbours of large events, complaints management, noise management and certainty for neighbours on when noise can be generated. Whilst it may be possible to draft such provisions into a rule, it is my experience that carefully crafted conditions in a resource consent would be a better mechanism for specifying the outcomes required and to inform and require the adoption of the BPO.

12. EVIDENCE OF MR HAY

12.1 I have read the evidence of Mr Hay for the WGC and I have the following comments:

12.2 In paragraph 36, Mr Hay discusses the review of the original Styles Group report undertaken by Mr Hegley in February 2014 and our response to that from March 2014. Ms Cox relies on the original report. I can confirm that the matters raised in Mr Hegley's February letter were either responded to with clarification or were already addressed in the original report. The matters raised and clarifications sought by Mr Hegley were all minor and he raised no matters that required alteration to any of the content or the conclusions of the original report.

12.3 For that reason, I am satisfied that any reference to the original Styles Group report by Ms Cox or any other witness is appropriate and does not require correction.

12.4 For reference only, attached to my evidence as Appendix 3 is my March 2014 response to Mr Hegley which includes his questions.

12.5 In paragraph 69, Mr Hay recommends a number of changes to the rule, including a 5 point uplift to all of the CNR values. As I have already noted, I do not support the measurement and assessment locations set out in the rule. Notwithstanding, I consider that even to meet the values recommended by Mr Hay at those points, the WGC would still be restricted to no more than around 100 shots per day which I understand to be considerably less than a viable number.

13. EVIDENCE OF MR HEGLEY

13.1 In paragraphs 1.3 and 1.4, Mr Hegley states that he has undertaken noise level measurements at the WGC "...*under controlled conditions with some noise screens adjacent to the shooting positions...".* It is impossible to determine the effectiveness of any such screening from this statement or what the controlled conditions were.

13.2 Screens may only logically be placed to the side of the shooter. When considering that the shooting stands directly face some of the most exposed residential dwellings, I very much doubt that any appreciable reductions would be achievable from screens, and even if there was any reduction at all.

13.3 In paragraph 1.4, he states that "...*from the above work, and limiting ammunition to 12 gauge and 28 grams of shot...*" It is my understanding that the WGC have been using 12 gauge shotguns with 28 grams of shot only for some considerable time, including when our 2015 noise level measurements were undertaken. In fact, Rules 3.1 and 3.2 of the New Zealand Clay Target Association International Compak Sporting Rules[5] (to which the WGC is affiliated) limits gun and ammunition size to these same values.

13.4 This noise reduction measure will therefore make no difference to the current noise emissions.

13.5 When considering that screening will be largely ineffective and the 28 gram ammunition and 12 gauge gun limitations are already in place, I cannot understand how Mr Hegley has arrived at his view that noise emissions are going to be substantially less than they are currently in order to comply with the CNR values he recommends.

13.6 I note that the statements made in paragraphs 1.3 and 1.4 are in the Summary section of Mr Hegley's evidence. The remainder of his evidence is silent on this work and no useful information is provided to justify these initial comments.

13.7 In paragraph 2.5, Mr Hegley refers to his review of the original Styles Group report and our response. As above, I can confirm that Mr Hegley did not raise any matters that required any alteration to or further comment in the original Styles Group report.

13.8 Overall, I disagree with the conclusions reached by Mr Hegley and I note that he provides little or no justification, reasoning or technical information to support his views.

[5] http://www.nzclaytarget.org.nz/cmafiles/files/RulesPDFs/Compak%20Rules.pdf

14. CONCLUSION

14.1 The noise level measurements undertaken by Styles Group in 2013 show that the noise levels generated by the WGC are unreasonable, and the 2015 measurements show that the noise level of shots has not changed appreciably in the intervening period and if the shot count remains similar to that observed in 2013 then the noise levels are still unreasonable in terms of s16 of the Act.

14.2 It is important to note that there are several variables discussed in this evidence and the evidence of Mr Hegley and Mr Hay, including the noise level of each shot, the number of hours and days that shooting can occur, community adaption and others. A reduction or increase in any of these may lead to a reduction or increase in others to achieve a reasonable outcome. For example, a reduction in the number of days per week that shooting can take place may allow a higher intensity of shooting on the days that shooting is permitted, and vice versa.

14.3 The evidence of Mr Hegley fails to provide sufficient information to explain how the much lower CNR values in the notified PAUP and in his suggested modification (with a 5 point uplift) will be able to be complied with. From his very basic explanation I cannot see how the reductions required will be achieved.

14.4 For the high level of noise generated by the WGC, I also consider that the notified rule allows for a duration of noise that is too long in a day and over a week, and that a considerable reduction is required.

14.5 I consider that even with the modifications suggested by Mr Hegley, the rule does not provide a sufficiently detailed set of controls to manage the noise adequately such that the BPO is identified and adopted for the ongoing use of the site. I consider that carefully crafted resource consent conditions would likely be a better way to prescribe the noise management requirements, including provisions for advising neighbours of large events, complaints management, noise management and certainty for neighbours on when noise can be generated.

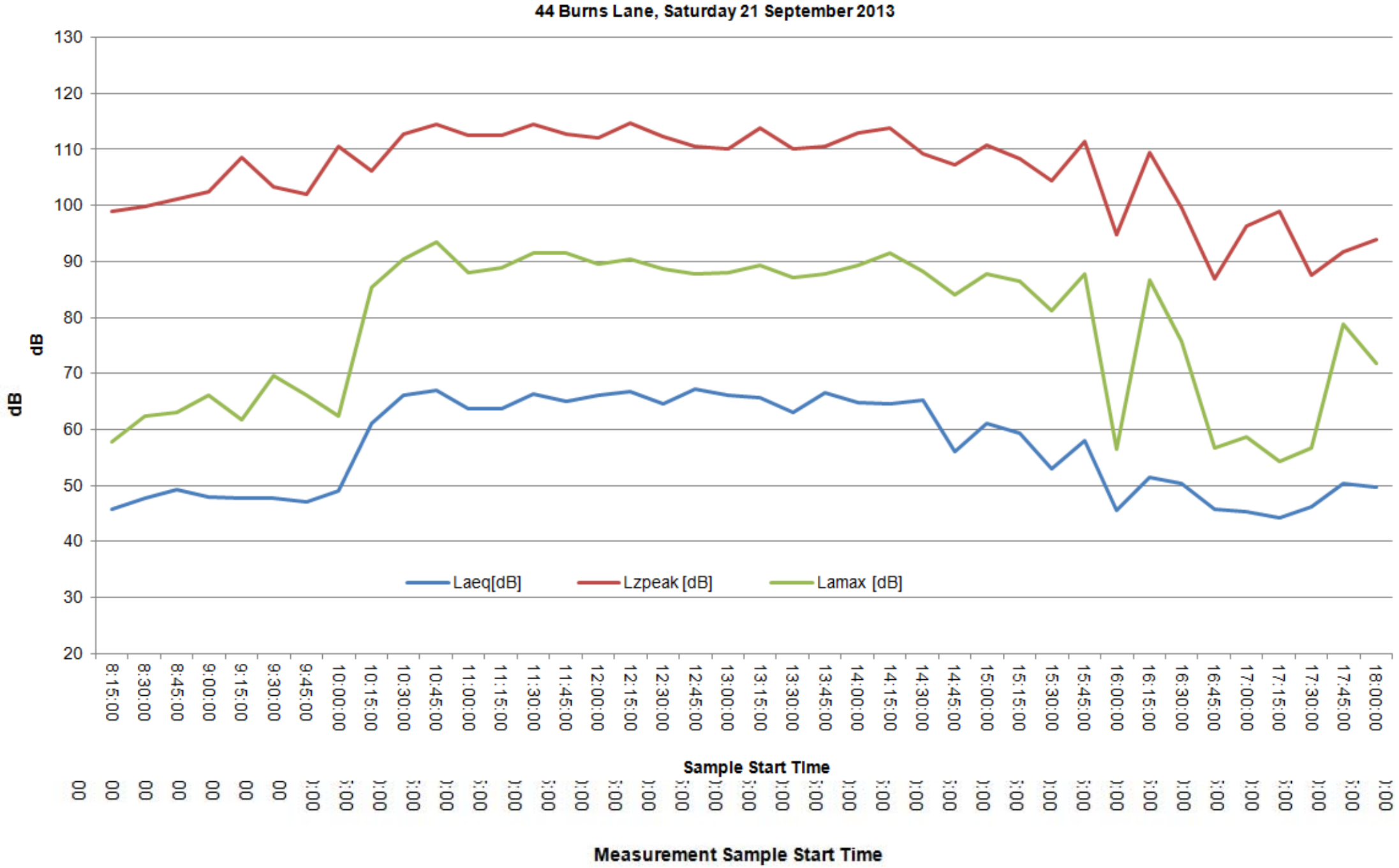
14.6 I note that there are several non-acoustical factors that are important in the overall determination of what is reasonable in terms of s16 in this case, such as the historical use of the club and the chronology of the surrounding residential development. These factors require consideration by those that are suitably qualified to do so.

14.7 I do not support the notified rule or the rule proposed by the WGC and I consider that the current noise emissions are unreasonable in terms of s16 and that compliance with the rule proposed by the WGC is not likely to be able to be achieved whilst maintaining the number of shots that the club seeks to remain viable.

Jon Robert Styles

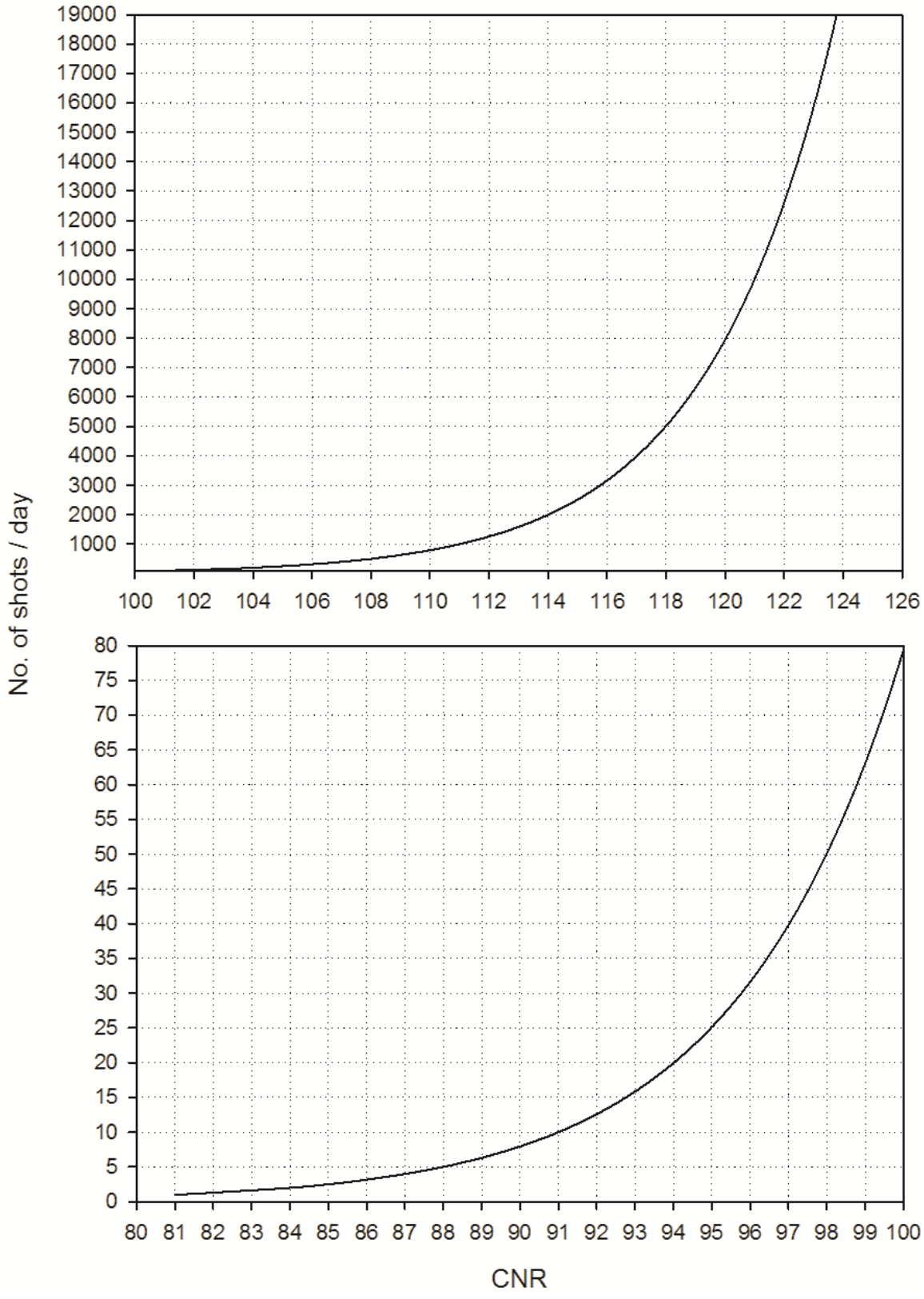
4 February 2016

Appendix 1



Appendix 2 – Relationship between Number of Shots and CNR for 41 Pinetone Road

Appendix 2



Relationship between CNR and number of gun shots for: (A) 100 – 19000 shots, and; (B) 0 – 80 shots based on L_{ZPeak} 108dB

Appendix 3 – Response to Hegley Review of Original Styles Group 2013 Assessment

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25th March 2014

Margaret McCullough

Auckland Council

By email: margaret.mccullough@aucklandcouncil.govt.nz

Dear Margaret,

RE: The Waitemata Gun Club (WGC) Response to Hegley Queries (17 Feb 2014)

We provided an acoustic report, dated 12th December 2013, detailing our assessment of the noise emissions from the Waitemata Gun Club. Below are the comments from the Hegley Acoustic Consultants (HAC) Report and our responses to them. As a preface to this response, we note that most of the answers to the queries raised are already set out clearly in the original report.

1. *It is stated there was little wind (<5ms^{-1}) during the measurements. Could the actual wind speed and direction be provided? It would also be helpful if we could be given the cloud cover during the measurements.*

The measurements have been undertaken within the "Meteorological Window" in accordance with NZS6802:2008 and the results require no adjustment for meteorological influences before being reported under these circumstances. Notwithstanding, the weather dataset is provided below:

20th July:

Pinetone Road: 1 ms^{-1} N wind; 1 octa

86 Burns Lane: 1 ms^{-1} N gusting 2-3 ms^{-1}; 3 octa

165C Oraha Rd: 1 ms^{-1} N gusting 1.5-3 ms^{-1}; 6 octa

8th September:

Pinetone Road: 2.4 ms^{-1} W gusting 4.7 ms^{-1}; 5 octa

165C Oraha Road: 3 ms^{-1} W gusting 9 ms^{-1} (periods removed from measurements); 7 octa

21st September:

Pinetone Rd: 4.1 ms^{-1} NE; 1 octa

44 Burns Lane: 3.2 ms^{-1} NE; 2 octa

22nd September:

Pinetone Rd: 3.8 ms^{-1} NW; 3 octa

44 Burns Lane: 3.2 ms^{-1} W; 3 octa

2. *Both the 1999 and 2008 noise standards are referred to in the report. The club does have consent for the activity (and possibly existing use rights) so why has the standard that was applicable at the time of consent not been used?*

R2 The WGC had been granted consent but with no conditions in 1966. Furthermore, the WGC's application was for shooting to occur one day per month and no files can be found on the Council's record to suggest otherwise. Notwithstanding, our brief was not determine compliance or otherwise with any historical conditions; but to determine whether or not the noise levels are reasonable. To do this using historical standards that are out of date would be farcical. For this reason (amongst others) we have used the latest standards for our assessment.

3. *It is noted that unattended monitoring was undertaken. Are the weather conditions available for this time period?*

R3 The unattended monitoring was undertaken simultaneously with attended monitoring, so the weather conditions will be the same as those reported.

4. *It has been reported that only a snapshot of the activities have been measured and then the report goes on to say the measurements are sufficient to provide an assessment for a variety of scenarios involving more or less shots per day. Could information be provided on how any use of the different stands at the monitoring point has been taken into account?*

R4 Our brief did not include a detailed analysis to determine the variation in noise levels between stands, and nor would it have been practicable for us to do so during our measurements (due mainly to the very large volume of shots being fired from all stands, often simultaneously). Determining the contribution from individual stands from each monitoring point is well outside the scope of our involvement at this time.

5. *The report states that for the purpose of this assessment we have taken the general approach of assessing the loudest 15 minute period for each receiver over the day. Has it been considered that NZS6802 (any version) requires the noise to be representative for the assessment. Could we be advised how the loudest 15 minute period for each receiver is representative?*

R5 The reason for this approach is set out clearly in the report. The loudest period has been used only to best-ascertain the number of shots in that period so that the other quieter periods can be determined using the same formula. This has nothing to do with the NZS6802 series of standards and nor should it. The loudest period has not been used to determine whether or not the noise levels are reasonable or otherwise as the request suggests it has been.

6. *The report states "the logarithmic average L_{ZPeak} level has been calculated from the same time period as the L_{Aeq} value presented alongside. Whilst this is not strictly the same as the logarithmic average over a whole day..the log average over the day would be little different". Could the total number of shots be advised, how many shots (if any) are estimated to have been missed, which stands and the times they were being used during the testing and the time when the "highest 15 minute L_{Aeq}" period was monitored so this assumption can be reviewed and how the logarithmic average L_{Zpeak} level relates to the CNR value.*

R6 All answers to the above points have been provided for already in the original report and we suggest that this should be reviewed in detail. The only information not provided in the original report is which stands were being used during the measurements; we are not privy to this information and nor it is necessary for the purpose of our assessment. Our assessment has been based simply on the noise levels received by the neighbouring properties.

7. *The report states that "Y is the log average L_{Zpeak} level for all shots over the day". The formula in the Hede and Bullen report states "Y is the unweighted Peak Level". Could it be advised if, all else being equal, these give the same CNR.*

R7 There is no difference between an L_{Zpeak} and un-weighted peak level. The term "un-weighted peak level" from the Hede and Bullen Report is somewhat ambiguous, as it is unclear whether it applies to the loudest shot of the day (or year) or whether it is reasonable to assume some kind of average or typical value, keeping in mind that at any receiver position the L_{ZPeak} levels can vary up to 40dB or more. Clearly it is not fair on the WGC to use the very loudest measured peak to assess the noise levels over a day or year (as the CNR would be very high). In the absence of any guidance we have used the log-average L_{ZPeak} level for the assessment and we consider this to be fair to the WGC and representative for the neighbours.

8. *It is acknowledged in the report that CNR 90 has been adopted in past cases although it is the opinion of Styles Group that a limit of CNR 90 has not been sufficiently justified as*

a reasonable limit for the WGC. It is noted that one of the variables in the CNR formula includes a number for the degree of community adaptation and 13 has conservatively been used with the added comment that the CNR is too high for this area (ie the 'adaptation number' is too high). The report adopts 13 – 24, the higher number reflecting the maximum amount of community adaptation. Could the reasoning be given by such a stringent approach has been adopted in an area where the majority of, if not all, residents have moved to the noise source?

R8 While it may be true that some or all residents have moved to the noise source, the activity is advertised to operate only 3-5 days a week. However, we understand that the WGC is now operating during weekends, and numerous residents have reported the WGC operating 7 days a week for more than a week at time. Given the numerous complaints received by Council and a petition containing 19 signatures from the surrounding neighbours, there is no evidence to suggest the community has adapted to the noise levels on any large scale. We have therefore adopted the value that, in our opinion, best reflects the situation. A good level of adaption cannot be assumed just because residents moved in following the establishment of the gun club. The adaptation value should not be determined with reference to 'who was there first'; it is in fact a value that should be determined based on whether or not the community have actually adapted to the noise. In any case, if the fully adapted value is used in the CNR formula, the CNR levels will still be at least 16 points above 90.

9. *The analysis has been based on an annual number of shots fired as set out in the equation given for CNR. However, the analysis undertaken has been based on the number of shots per individual 15 minute period and the report states the loudest 15 minute period was used. Could it be clarified how this is adopted in the CNR formula?*

R9 Contrary to what is suggested, the analysis of the CNR level has not been based on the loudest 15 minutes. This has been clearly explained in our report and does not need repeating here.

10. *The number of shots adopted has been based on a SELx calculation yet the formula used specifies the number of shots fired. Can it be clarified how this related to what is occurring in the field and what the formula requires?*

R10 Please refer to R9. The number of shots in the loudest 15 minute period has only been used as part of the calculation to derive the number of shots per day. It is the number of shots per day that has been used in the CNR equation.

11. *Could it please be clarified how the number of shots fired in any given 15 minute period relates to the annual number of shots fired as assumed in the formula calculations.*

R11 Quite simply; there is no relationship. Responses 9 and 10 together with our original report provide sufficient information on this point.

12. *The formula adopts the noise for all shots, not a selected number. Could it be clarified why the report says "it would be artificial to include the proportion of quiet shots into the CNR calculation when these are not the main cause of annoyance". Could technical reasons be provided to endorse this conclusion?*

R12 The inclusion of quieter shots will be artificial because it would provide an over-inflated CNR value and no difference to the reasonableness of the noise. The inclusion of quieter shots may be incorporated if it is felt absolutely necessary, however it will not alter the conclusions of the report or our recommendations (refer to Appendix 2 for exponential relationship in number of shots versus the CNR). It would, however, produce a higher CNR value. As discussed in the original report, the log average L_{ZPeak} level is not sensitive to the introduction of quiet shots so that parameter will also be relatively unchanged.

13. *The report states "Based on this, the number of noisy shots that would control the CNR level over the day is estimated at 2782 for 41 Pinetone Road and 7184 for 44 Burns Lane". It is further stated "it would be artificial to include the proportion of quiet shots into the CNR calculation when these are not the main cause of annoyance". It would be helpful if it could be explained how the number of shots have been derived if the "quiet" shots have not been included in the assessment.*

R13 The method we have used to calculate the number of shots was explicitly explained within the original report and this should be consulted to answer this query.

14. *A CNR of 119 and 121 has been calculated at 41 Pinetone Road and 44 Burns Lane, respectively. Could it be advised if the same levels would have been calculated if all shots had been included and assessed in terms of the published formula.*

R14 Please refer to R12 and R13. The CNR would increase slightly if all of the quiet shots were included in the calculation. As set out in the report, we consider this to be an artificial increase in the CNR value which is inappropriate. This query also highlights one of the problems with the CNR formula in that strictly speaking it does take account of shots that may not even be audible at the receiver(s). To include these would clearly be inappropriate.

15. *It is reported that the levels are "very high compared to levels of no higher than 90 which are considered reasonable for other cases in New Zealand." It would assist in our assessment if we could be advised of any case where there is a history of a gun club being well established and operating with a consent as long as this gun club. Alternatively, could we be advised of an example where there has been an assessment*

of a club that has been operating for a relatively short period of activity prior to adopting the CNR assessment and what number was used for the community adaptation.

R15 We have not conducted a detailed assessment of other gun clubs that have been operating in a similar manner to this one. With respect to the references made to the WGC consent, it must be kept in mind that the original consent limited the days per week to less than what the WGC have been operating over, and that the consent had no noise limits imposed. In relation to the last point, there are several cases where new or recently established clubs have been assessed using the CNR metric with a value of 13 used for community adaptation (or no adaptation).

16. *The report states "noise emissions are currently unreasonable in terms of s16 of the Act for the receivers". To assist with our assessment could it be advised if providing screening where practical, selecting ammunition with the minimum practical burn rate, and hence noise, strategic use of the different stands and limiting the hours of operation would satisfy the best practicable option in terms of s16 and if not what measures are considered to be appropriate by Council.*

R16. We have recommended that a range of mitigating measures are explored in the Possible Mitigation Measures section of our report. These are generally consistent with those recommended in the query. Clearly it is too early at this stage to provide a view on whether or not the suggestions would satisfy the best practicable option. A much greater level of detail would be required to satisfy the Council that the BPO had been adopted. Nevertheless, we encourage the investigation of the suggestions above.

17. *The report concludes "it is our opinion that the noise emissions generated by the WGC are unreasonable in terms of s16 of the Act..." It would be helpful if we could be advised, that is all practicable steps have been undertaken in terms of s16, would Council believe the noise is still unreasonable in terms of s16 of the Act.*

R17 Please refer to R16. Quite obviously we would have to understand what the noise levels would be following the implementation of such mitigation before we can give a view on this.

18. *It would be helpful if we could be advised if any account has been taken of Environment Court decisions such as the argument that the same level of noise protection cannot be expected for a person that comes to the noise as when the noise comes to the person?*

R18 It would be helpful if such decisions could be cited, and then a properly considered view could be given. It is our opinion that the noise levels are unreasonable whether or not the receiver was there first or not. That is not to say that we have discounted such a consideration, but rather that the levels in this case are so high that they are considered unreasonable in either situation.

If you have any further questions, please do not hesitate to contact me.

Kind regards,

Jon Styles
Director & Principal
Styles Group Acoustics & Vibration Consultants