

DESIGN ADVICE MEMO

ACOUSTIC



Memo No **A01 Issue C**
Job Name **Z Energy Rolleston**
Job No **200300/A/1**
Date **7 May 2020**
To **Selwyn District Council**
Email **Jane.Anderson@selwyn.govt.nz**
Attention **Jane Anderson**
Copies to

P 03 366 1777

W www.pfc.co.nz

383 Colombo St, Sydenham,
Christchurch

PO Box 7110, Sydenham 8240
Christchurch

PEER REVIEW OF MARSHALL DAY ACOUSTICS NOISE AEE FOR PROPOSED Z ENERGY ROLLESTON

Introduction

1. Powell Fenwick have been engaged by Selwyn District Council (SDC), to provide acoustic peer review of the Marshall Day Acoustics (MDA) Noise Assessment of Effects for a proposed Z Energy Station in Rolleston and changes to the operation of the adjacent Rolly Inn.
2. I, Mark Lewthwaite have conducted the review. I have over 10 years of experience in acoustic consulting, including experience in resource consent noise assessments. I lead the Powell Fenwick acoustic team. I have a Bachelor of Engineering Degree with Honours, and am a Chartered Professional Member of Engineering New Zealand.
3. I have witnessed initial application documents:
 - 4Sight Consulting report “Establishment and Operation of a Service Station and Operation of the Rolly Inn and Associated / Ancillary Activities (for both activities)”, dated 21 Feb 2020.
 - Particular attention was given to Appendix J being the MDA report “Z Energy Service Station Rolleston Assessment of Effects”, Rp 001 R01 20190944, dated 07 Feb 2020 (henceforth referred to as “MDA AEE”).
4. I have further witnessed:
 - Response to SDC RFI question 12 related to noise, 4Sight Consulting letter “Re: RC205094, s92 Further Information Request, 2 Brookside Road, Rolleston”, dated 31 Mar 2020.
 - Particular attention was given to Attachment 4 being the MDA letter “Response To RFI - Z Energy Service Station, Rolleston” dated 23 Mar 2020 (henceforth referred to as “MDA Letter”).

AND

- Emails between planners regarding existing use rights for activities at the Rolly Inn, including Michelle Kemp from 4Sight Consulting email to Jane Anderson from SDC on 28 Apr 2020, offering consent conditions for Rolly Inn activities.
5. The MDA Report S1.0 states “Marshall Day Acoustics has been engaged by Z Energy to assess the potential noise-related effects from a proposed service station at 2 Brookside Road in Rolleston”.
 6. This scope is elaborated on in S2.2 “The Rolly Inn bar and restaurant is included in the application area and therefore we have included noise emissions from this activity within our assessment. We understand that the only change proposed to the Rolly Inn activity is to provide a private function space on the first

floor of the building. The proposed private function space will only be used within the existing operating hours of the Rolly Inn, and will not include the use of any amplified sound systems or music. We understand that the space will cater for around 60 people and is only expected to be used a few times per month.”

7. I note planning correspondence around existing use rights of the Rolly Inn. I have been advised that existing use rights have not been resolved, and that noise effects from all activities taking place in the Rolly Inn should therefore be considered. The application documents lack the typical level of assessment detail that would be expected for bar/restaurant activities. Conditions of consent for the broader Rolly Inn activities have however been proposed and these are reviewed later in this memo.
8. I understand the Application is deemed non-complying as a result of wider planning matters.

Review of Service Station and Rolly Inn Private Function Space

9. The proposed service station site at 2 Brookside Road which also incorporates part of 6 and 10 Brookside Rd is zoned Living 1 in the Selwyn District Plan, and is located alongside State Highway One (SH1) and Brookside Rd. Surrounding properties on the same side of SH1 are also zoned Living 1.
10. The following sources of noise relating to the proposed service station development have been considered as listed in MDA AEE 5.1:
 - Carwash facility
 - Vacuum facility
 - General activity on the forecourt such as customers arriving and filling their vehicles
 - Heavy vehicle movements and fuel delivery activity, which utilises a gravity fed system
 - Outdoor mechanical plant and equipment such as air conditioning units, extract fans and condensers associated with the future store building
11. Selwyn District Plan (SDP) Living Zone Rule 10.6 has limits of 50 dB L_{A10} and 85 dB L_{Amax} during the day-time period of 0730-2000 hours, and 35 dB L_{A10} and 70 dB L_{Amax} during the night-time period of 2000-0730 hours. Noise shall be assessed at any point beyond the boundary of the site from which the source of any noise of interest is situated.
12. MDA identify the following locations in MDA AEE S5.3 Table 6 as being subject to average (dB L_{Aeq}) noise levels above the numerically equivalent centile level (dB L_{A10}) limits in the SDP, during the night-time period, when occasional heavy vehicles movements are included.
 - 3-5, 4, 6, 7, 9, 11, 15 and 10 Brookside Rd
 - 10, 12, 14, 20 Byron St
 - The legal roadway as it is beyond the boundary of the site.
13. MDA in S6.1, 6.2 state the expected average noise levels of up to 50 dB L_{Aeq} during the day, and 45 dB L_{Aeq} at night-time are acceptable with reference to World Health Organisation (WHO) Guidelines for Community Noise 1999, and elevated ambient noise levels principally due to traffic. Those guidelines and levels are:
 - WHO Table 1:
 - Outdoor living area, moderate annoyance day-time and evening, 50 dB $L_{Aeq(16 \text{ hours})}$
 - Outside bedrooms, sleep disturbance, open window (outdoor values) 45 dB $L_{Aeq(8 \text{ hours})}$
 - MDA AEE S3.1, 3.2 noise survey ambient noise levels in the order of 59-67 dB L_{Aeq} across several nearby locations over 10 min or undefined periods, at approx. 0600 hours and 2200 hours.
14. MDA in MDA Letter Table 1 predict maximum noise levels up to 79 dB L_{Amax} , with most properties listed above subject to night-time noise levels above the maximum noise limit in the SDP due to heavy vehicle park brake use.

15. MDA in MDA Letter 1 state the maximum noise levels are acceptable as “The maximum noise levels predicted at the nearest receivers are similar to those produced by traffic on the existing roading network but would occur much less often”, and “given the existing ambient noise environment”. Those ambient maximum noise levels varied between 75-82 dB L_{Amax} during the aforementioned noise surveys.
16. While the calculations for the noise assessment are not described in full, on the basis of the included noise sources it would appear the assessment is appropriate.
17. I agree that the existing ambient noise environment has significant margin (in the order of 10-15 dB) over the predicted service station average noise activity levels, and the incidence of louder events should be comparatively infrequent if heavy vehicles do not typically use the service station as described. And with the proposed service station noise predominantly vehicle related there is largely consistency of noise character with the traffic dominated noise environment. I therefore also consider the average and maximum noise levels predicted for the service station would be acceptable.
18. I also agree with the change in acoustic descriptor (L_{Aeq}) for the reasons given by MDA in MDA AEE S4.4, and consider there should be no need to assess activity noise levels received on the roadway.
19. No assessment is given of noise effects from the establishment of the Rolly Inn private function space described in S2.2, though from the description it is unlikely any additional identifiable noise effect would occur from internal activities. Noting however that laughter and raised voices were audible during the noise survey presented in MDA AEE S3.2 the establishment of the private function space should not increase use of the outdoor area. Increase in late night car park movements could occur however no comment has been made on this in the MDA AEE. We would expect due to the separation to residential properties afforded by the proposed service station to the west and Brookside Rd to the south that night-time car park vehicle movements would have minimal on-site noise effect, though we recommend clarification of the effects is sought during the consenting process.
20. No particular noise limit or condition is proposed for the service station activity. We propose the following noise conditions with relaxed average noise limits to provide margin to the predicted average noise levels, otherwise the timeframes and maximum noise limits remain as per the SDP.

“The consent holder shall ensure that all activities on the site measured in accordance with the provisions of NZS 6801:2008 Acoustics - Measurement of environmental sound, and assessed in accordance with the provisions of NZS 6802:2008 Acoustics - Environmental noise shall not exceed the following noise limits at any point within any residential site or at any point within the notional boundary of a rural dwelling, other than a dwelling on the site to which this consent applies, during the following time frames:

Daytime 0730-2000 hours	55 dB $L_{Aeq}(15 \text{ mins})$, 85 dB L_{AFmax}
Night-time 2000-0730 hours	45 dB $L_{Aeq}(15 \text{ mins})$, 70 dB L_{AFmax}

These noise limits shall not apply to (a) construction noise which shall be assessed in accordance with NZS 6803:1999 Acoustics - Construction noise, and (b) to no more than three fuel delivery vehicles in any 24 hour period.”

21. MDA propose the following noise mitigation in MDA AEE S5.2, the benefits from which are included in the predicted noise levels:
 - A minimum 1.8 m high solid timber fence along the western boundary of the site to an included MDA fence detail. Note that the height of the fence is reduced to 900 mm for the first three metres of each end of the fence for visibility reasons
 - Carwash and vacuum facility operation is limited to daytime hours only (0730-2000 hours)
 - The carwash is fitted with high sound insulation performance doors to ensure it does not exceed 84 dB LAE at 10 metres from the entry/exit doors for one full cycle of the longest carwash option.
22. I further note that the vacuum position is screened from the residential properties on the south side of Brookside Rd by the carwash.

23. I also recommend ensuring road crossings, particularly to Brookside Rd, are designed to minimise changes in grade to reduce entry and exit noise, and this may also apply to the Rolly Inn crossing if increased late night car park vehicle movements are identified.
24. The above noise management measures should be part of a Noise Management Plan (NMP) submitted to SDC before commencement of the activity.

Review of Rolly Inn Activities

25. The broader activities related to the operation of the Rolly Inn have not fully described or the noise effects assessed in the application either in initial documents or subsequent correspondence, other than noting that laughter and raised voices were audible during the noise survey presented in MDA AEE S3.2. However this noise survey was brief and did not describe the activities taking place in the Rolly Inn at the time and we have not been able to establish whether the activities and therefore the measured levels could be considered representative of worst case noise levels from the Rolly Inn.
26. We are therefore reliant on noise conditions proposed by 4Sight Consulting in email to SDC on 28 Apr 2020 which are as follows:
 1. *No bands shall play outside of the Rolly Inn building.*
 2. *Noise from any activity associated with the Rolly Inn shall not exceed the following noise limits at any point within 11 and 13 Brookside Road, Rolleston:*

Daytime (0700 - 2200 hours)	55 dB L_{Aeq}
Night-time (2200 - 0700 hours)	45 dB L_{Aeq} and 70 dB L_{AFmax}

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".
 3. *There shall be no voice or music amplification associated with the Private Function Area of the Rolly Inn.*
27. There are a lot of bars and restaurants that operate based on the limits proposed above, however often there would be a more immediate position for assessment than 11 and 13 Brookside Terrace proposed above. We expect these positions for assessment have been proposed as closer residential properties may have given affected party approval. However, setting these more distant positions for assessment accepts a greater level of noise exposure across a wider area, exceeding District Plan noise limits in more locations, and these noise effects have not been justified in the application.
28. I would be more supportive of the conditions should the assessment positions be at any point within any residential site or at any point within the notional boundary of a rural dwelling, *irrespective of affected party approval*, as a means to control wider community noise exposure.
29. It may be that additional noise assessment of the Rolly Inn activities could justify the proposed limits and assessment locations.
30. As requested I have considered what properties may be affected by Rolly Inn activities for the purposes of notification. Residential zoned properties on Brookside Rd, and in the block between Brookside Rd, Byron St and Tennyson St may be those more than minimally affected. This is not a statement of properties that may be subjected to noise levels exceeding those in the District Plan as there is insufficient information to determine this for the Rolly Inn. (Noting in point 12 above that MDA have provided a list of those properties related to the service station noise effects.)

Summary

31. I have undertaken a peer review of the MDA Acoustics Noise AEE, and RFI Response for the Proposed Z Energy Service Station in Rolleston. I agree that the existing elevated noise environment is a relevant factor to acceptability of noise from the proposed service station activities and that the predicted levels are likely to be suitable in that context. Relaxed noise limits are proposed in a noise condition.

32. The potential establishment of noise conditions related to all of the Rolly Inn activities is more difficult to review due to there not being detailed noise assessment of these activities, the absence of which relates to existing use rights for the Rolly Inn not being resolved. We have suggested a change to the Rolly Inn noise conditions proposed by 4Sight Consulting. Should a condition be agreed the service station and Rolly Inn conditions may be better combined.
33. Noise mitigation measures noted in points 18-22 above should be implemented in the design and/or be part of a Noise Management Plan submitted prior to commencement of the activity.