



Date: 05th July 2024
Project: Gold Street - Gravesend
Subject: Review of the noise impact assessment for the proposed winery
Document Ref.: 5088_AC_1.0
From: Stephan Booi (Principal Acoustics Consultant)

1. Introduction

- 1.1. A Planning Application for a newly built winery, on land off Gold Street near the Sole Street village in Gravesend, has been submitted to the Local Planning Authority, Gravesham Council. Details of the Planning Application can be found on the Gravesham planning portal under application ref: 20240544.
- 1.2. In support of the Application, a noise impact assessment of the proposed winery has been undertaken by Chris Wood Acoustics. The details and outcome of the noise impact assessment are presented in the 'Noise Impact Assessment' report, dated 05th June 2024 (ref. 231_02R_1-0_CWA).
- 1.3. Residents of dwellings located in Gold Street, whose gardens would border the proposed winery, have commissioned Lustre Consulting to undertake a third-party technical review of the 'Noise Impact Assessment' report (hereafter referred to as the 'NIA'), as concerns have been raised with respect to the veracity of the NIA.
- 1.4. This Acoustic Memo presents the findings of the technical review of the NIA.



2. Review

Assessment Criteria

- 2.1. Section 2 of the NIA, sets out the assessment methodology, including the noise assessment guidance considered relevant. Sections 2.4 and 2.16 onwards, the NIA discusses *British Standard 4142:2014* and *British Standard 8233:2014* respectively. Section 2 concludes that BS 4142 has been used as the basis of the noise assessment, which Lustre Consulting agrees is the most appropriate approach.
- 2.2. Sections 3 and 4 cover the existing environment and the proposal respectively.

Baseline Noise Conditions

- 2.3. The baseline noise conditions and survey results are discussed in Section 5 of the report. The report comprehensively describes the approach to the baseline noise survey, which is commended. Monitoring was undertaken at two survey positions, both of which are considered reasonably representative of the nearest noise-sensitive receptors.
- 2.4. The baseline noise survey was undertaken over approximately seven days. Whilst such a survey duration is considered to normally be sufficient for obtaining robust baseline data, at least five of the monitoring days appear to have been affected by adverse weather conditions with a relatively high possibility of precipitation and/or high winds during the survey period. Such adverse weather conditions can significantly affect the noise monitoring results, particularly when it comes to the underlying LA90 background sound level required for the BS 4142 assessment.
- 2.5. Assessment uncertainty with respect to baseline conditions is mentioned in para 6.47 of the NIA but fails to highlight the concern highlighted above. Given these concerns, Lustre Consulting conducted an additional baseline noise survey, which is discussed in more detail below.

Noise Survey

- 2.6. A long-term unattended baseline noise survey has been undertaken within the rear garden of Hevers Cottage, which is one of the dwellings directly adjacent to the proposed development.
- 2.7. The noise survey was undertaken from Friday 28th June to Wednesday 3rd July 2024 using a Norsonic Nor-140 precision Class I sound level meter (serial no. 1405197). The meter was set to log sound levels in contiguous 5-minute periods. Along the broadband noise levels, spectral data was also collected as were audio recordings for any 'events' above 65 dB(A) L_p .
- 2.8. The sound level meter was fitted with its proprietary all-weather environmental kit. The microphone was mounted on a tripod at approximately 1.5 m above ground level in a free-field position.
- 2.9. The photos below show the noise survey setup.

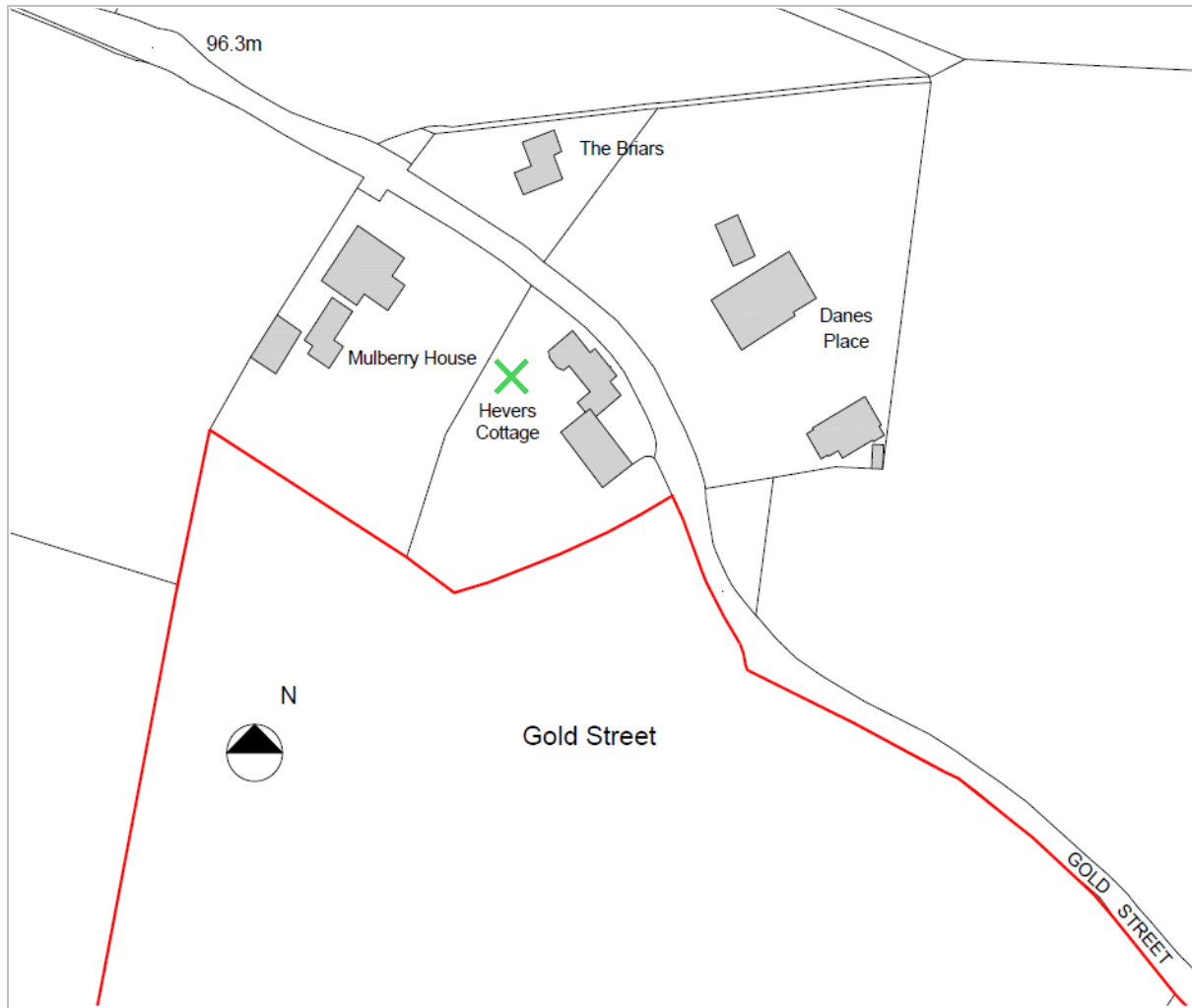


View towards Gold Street



View towards vineyard

- 2.10. The approximate noise monitoring position is shown in the figure below as the green 'X'.

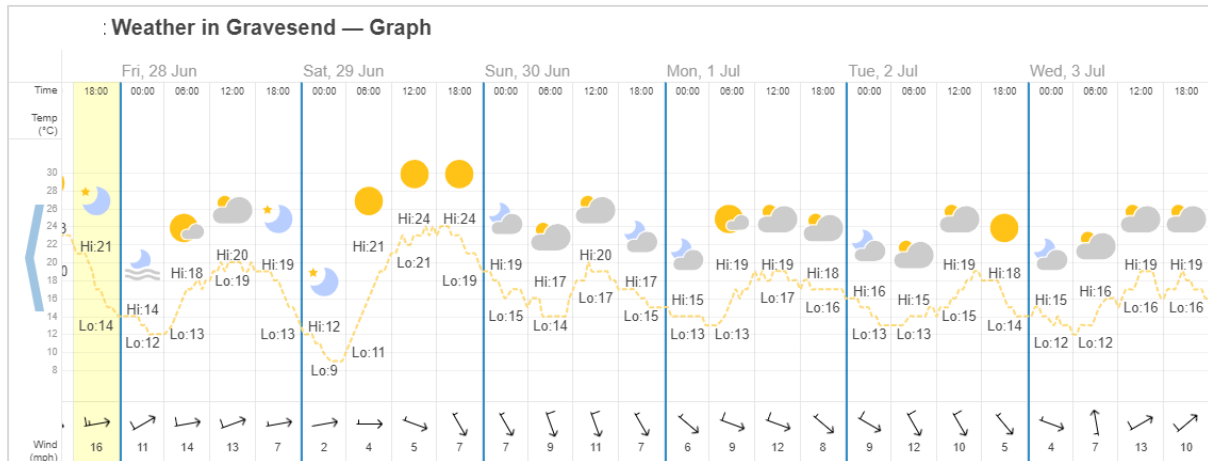


2.11. Pre- and post-survey calibration checks were carried out which confirmed that no significant drift had occurred during the survey.

Meteorological Conditions

2.12. Meteorological conditions during the measurement period were generally in line with recommendations for environmental noise surveys, with minimal wind (<5m/s or 11 mph) during the survey. An air temperature generally between 9°C and 24°C was noted during the survey. The conditions were noted as dry with cloud cover varying between sunny and overcast during the survey. Also see figure below.

2.13. From the audio recordings a short period of precipitation was noted between 4:00 and 6:00am on the 3rd July which affected the survey. Data from this period has therefore been discarded from the results.



Noise Survey Results

2.14. The baseline noise/sound level measurement results and derived data are presented in Table 1 below. Note that the 'Day' and 'Night' periods are taken as 07:00 – 23:00 and 23:00 – 07:00 hours respectively.

2.15. An overview of the noise survey results in graphical format is also available in the Appendix to the Memo.

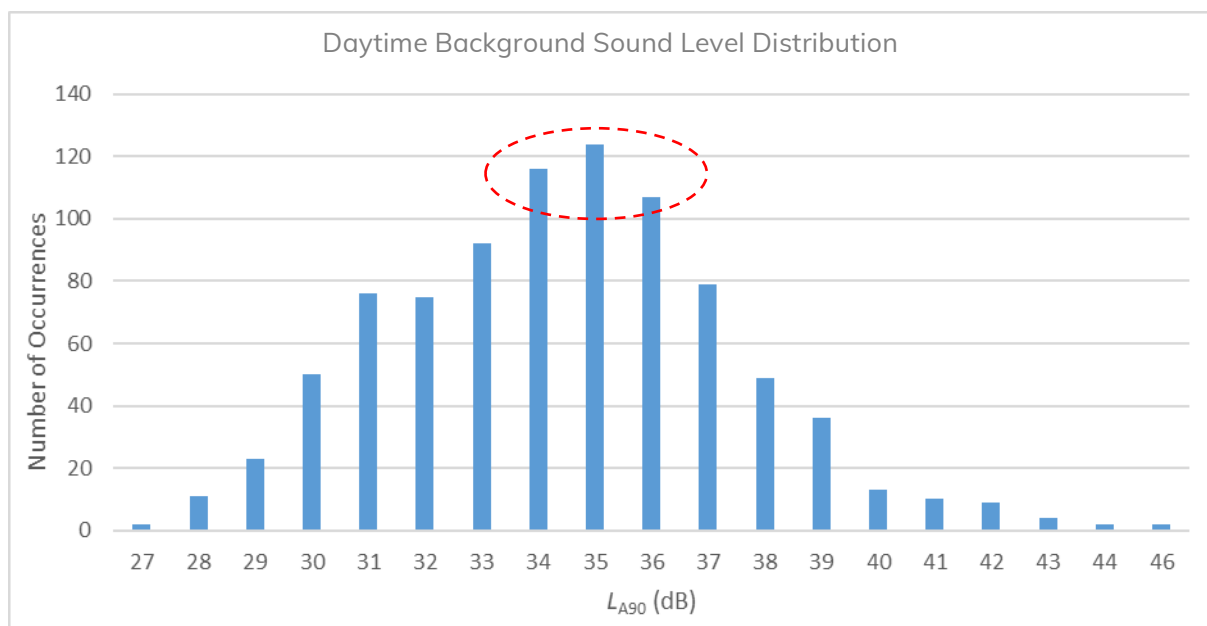
Table 1 Summary of Measured Noise/Sound Levels

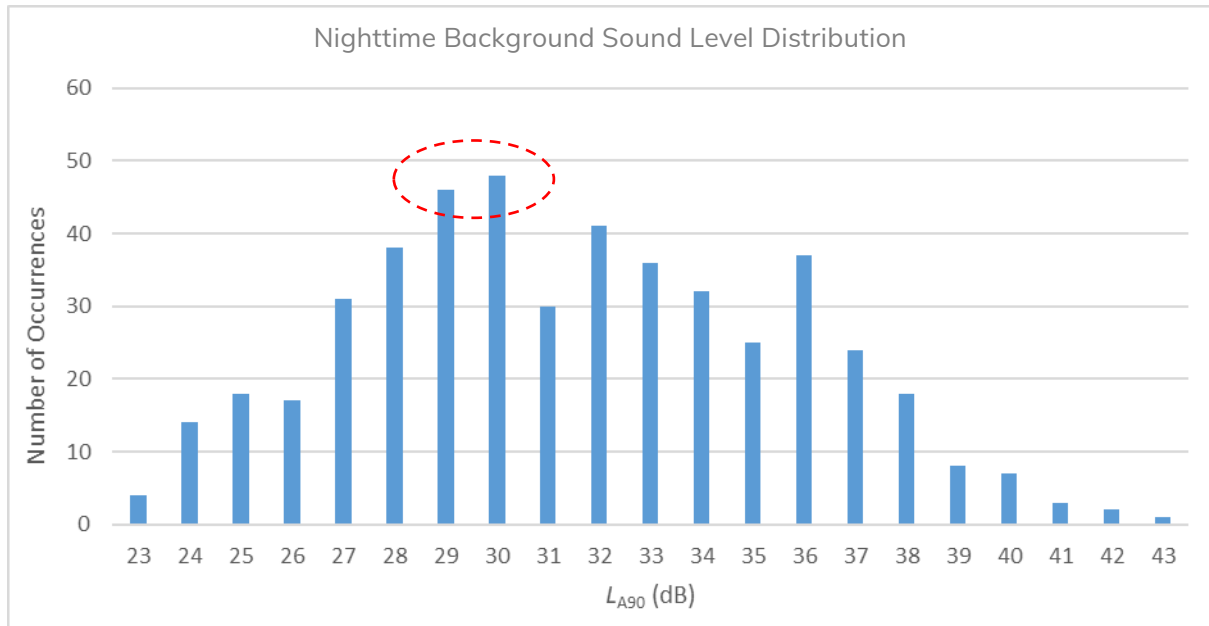
Monitoring Period and Time			Noise Levels (dB)		
			Ambient, $L_{Aeq}^{[1]}$	Maximum, $L_{AFmax}^{[2]}$	Background, $L_{A90}^{[3]}$
Weekday	Fri 28-Jun	16:40 - 23:00	44	64	33
		Night	-	-	-
	Mon 01-Jul	Day	44	65	35
		Night	47	68	28
	Tue 02-Jul	Day	45	64	37
		Night	44	67	32
	Wed 03-Jul	07:00 – 10:00	43	63	34
		Night ^[4]	37	54	31
Weekend	Sat 29-Junb	Day	47	65	32
		Night	48	71	32
	Sun 30-Jun	Day	44	66	35
		Night	45	68	32

Notes to Table 1:

[1] Logarithmic average over denoted period, [2] 90th percentile $L_{AFmax,5min}$, [3] Arithmetic average of the 5-minute values, [4] 04:00 – 06:00 data discarded due to precipitation.

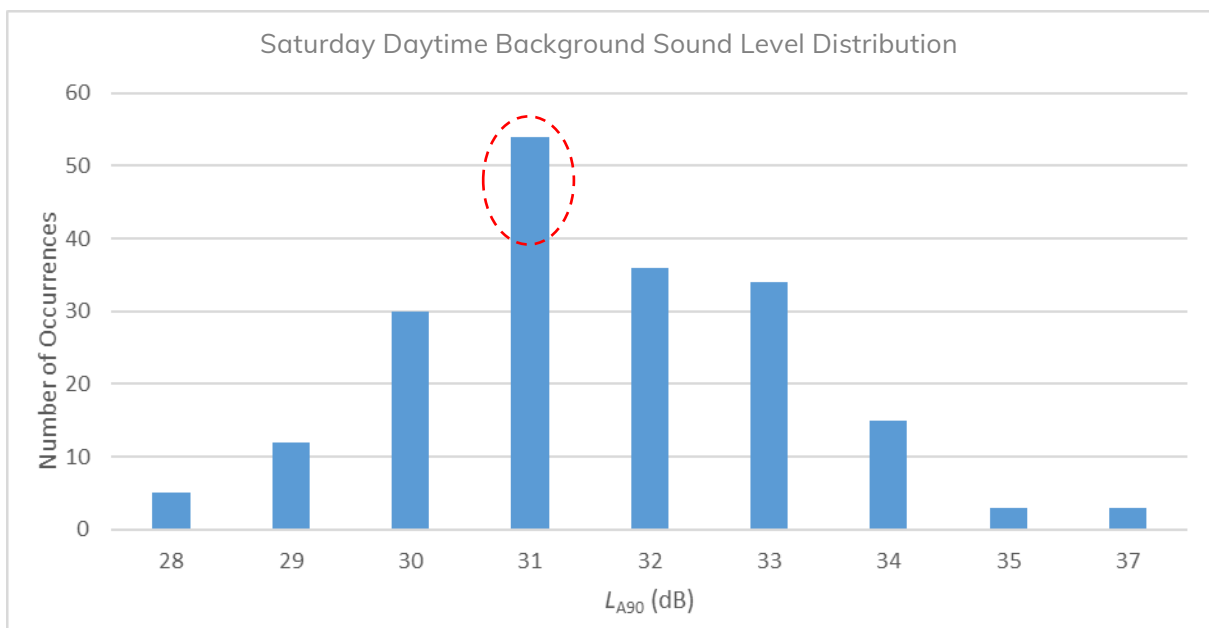
- 2.16. As can be seen from the results above, 'Day' sound levels are shown to vary between 43 and 47 dB L_{Aeq} . Interestingly, the 'Night' sound levels vary from 44 to 48 dB L_{Aeq} , (ignoring night-time data from 03 July) which is similar to the daytime noise level and even a little bit higher for some days. Typically, overall ambient night-time values tend to be lower than daytime noise. The audio recordings suggest that in this instance, elevated sound levels due to birdsong during early morning hours are responsible for this 'discrepancy'.
- 2.17. The results also show that there is little difference in ambient noise conditions during weekday and weekend periods. For the background levels however, daytime levels seem slightly lower but this is based on a limited dataset. The weather data indicate that wind speeds increased on the Sunday during the survey, which would have likely resulted in an overall increase in background sound.
- 2.18. The background sound levels in the table above are the arithmetic averages for each period. For the BS 4142 assessment, additional analysis has been undertaken as presented in the graphs below.





2.19. From the above analysis it can be argued that background sound levels of around 35 dB and 30 dB L_{A90} for the day and night periods respectively should be used for the BS 4142 assessment.

2.20. For daytime operation during the weekend, the case could be made that an even lower background sound level should apply as indicated by the 31 dB L_{A90} result shown in the graph below.





2.21. The NIA has used background sound levels of 40 dB and 31 dB LA90 for the day and night periods respectively. Whilst the 31 dB LA90 nighttime sound level is comparable to the Lustre Consulting results, the daytime 40 dB LA90 background sound level is significantly higher, thus more favourable for the Applicant.

Noise Modelling, Predictions and Assessment Outcome

2.22. Whilst Lustre Consulting has not reviewed the noise model used for noise egress predictions, from the information provided in the NIA, the noise modelling appears to have been undertaken to a good standard. Having said that, there are a number of observations and/or concerns, which are listed below:

- ▶ An internal noise level of 75 dB(A) along with typical Kingspan wall cladding has been used to estimate noise breakout from the proposed winery. The NIA states, without providing evidence, that “...based on general experience, sound pressure levels within the winery are highly unlikely to exceed 75 dB (LAeq,T)”. Whilst such an assumption may not be totally unreasonable, especially where reverberant conditions are considered, anecdotal evidence from winery bottling videos show staff wearing hearing protection during bottling operations. Thus indicating the potential for internal noise levels to be over 75 dB(A).

Moreover, data presented in the ‘Noise risk assessment in a bottling line of a modern Sicilian winery’¹ research paper also suggests that noise levels in the mid to high 80s dB(A) could occur. Again, this indicates that noise levels in excess of 75 dB(A) could occur.

In light of the above, the assertion in the NIA that “sound pressure levels within the winery are highly unlikely to exceed 75 dB (LAeq,T)”, may not be accurate, particularly where bottling operations were to occur close to the building wall.

- ▶ In relation to the above point, it appears that the Applicant is supported by Vinescapes, which seem to have significant connections within the UK viticulture industry (see <https://www.vinescapes.com/> website), thus presumably also

¹ Noise risk assessment in a bottling line of a modern Sicilian winery – Journal of Agricultural Engineering 2013; volume XLIV(s2):e140



access to winery facilities where representative noise data could have been obtained.

If the above assumption is correct, a representative noise survey of operational activities should have been undertaken to inform this assessment, rather than a somewhat arbitrary assumption on internal operational noise conditions.

- ▶ From the NIA it is unclear whether any spectral noise data have been used for the noise egress predictions. Using spectral data for noise level predictions tends to be more accurate, we therefore request this is clarified.
- ▶ From experience working in a vineyard (Lamberhurst Vineyard), the grapes are transported and moved around in pallet-sized 'containers' using noisy plant such as tractors and/or forklifts. The NIA has not considered the potential effects of such noise.

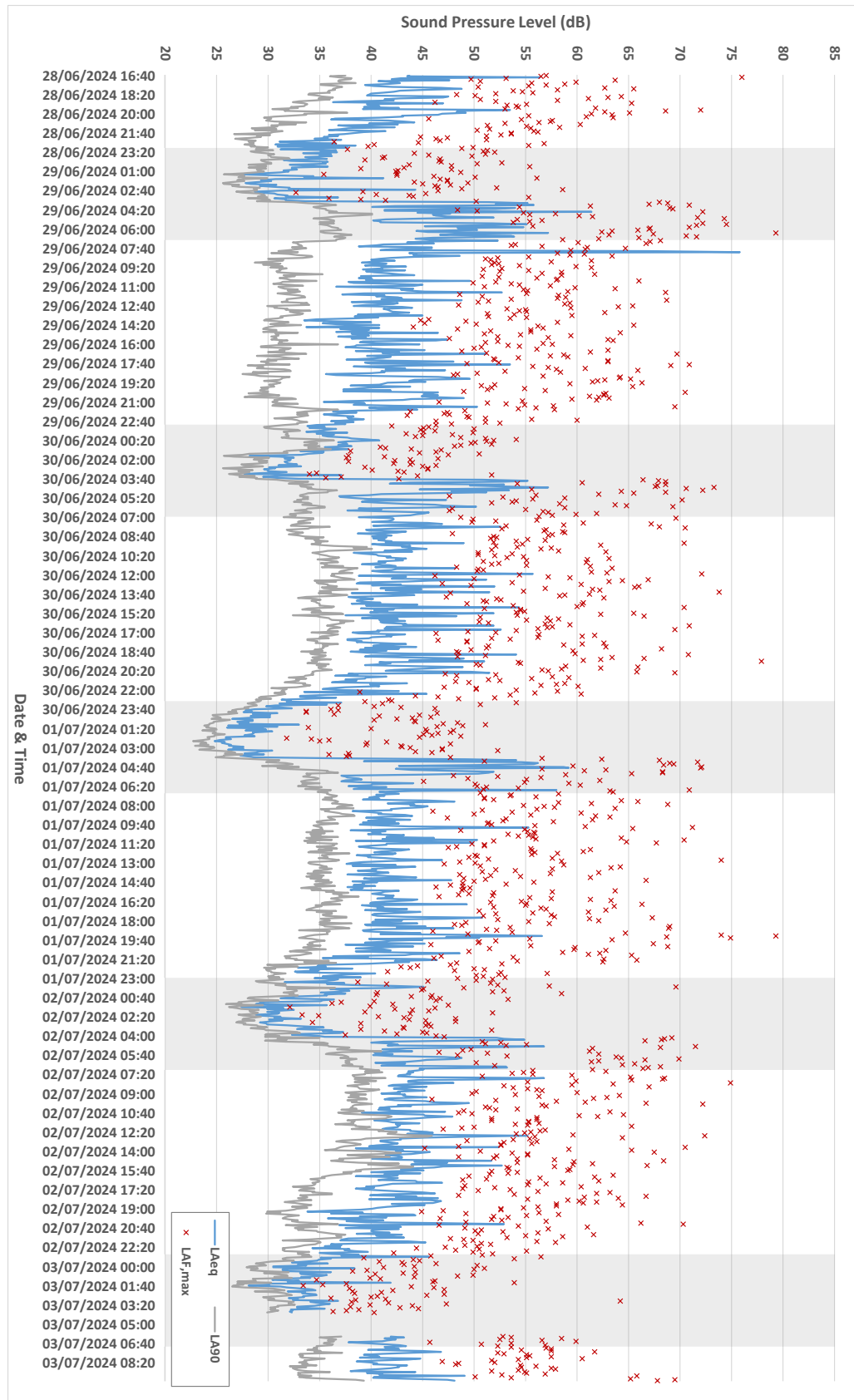
Although some of the mobile plant would likely be similar to current agricultural use at the site, the intensification and concentration around the winery would significantly differ from the typically transient drive-by agricultural use. In our opinion, mobile (external) plant should therefore form part of the BS 4142 assessment. The inclusion of such plant can significantly affect the BS 4142 assessment outcome.

Concluding Remarks

- 2.23. Notwithstanding all the concerns raised in this Acoustic Memo, from a noise impact perspective, the winery operation is proposed to be sited in the worst possible location, being proposed virtually directly adjacent to the noise-sensitive receptors.
- 2.24. This technical review has highlighted a number of concerns which could significantly affect the outcome of the BS 4142 noise assessment submitted in support of the proposed development. This is concerning, particularly given the context of a very tranquil rural AONB environment neighbouring residents currently enjoy.



Appendix I: Baseline Noise Data





Appendix II: Experience

Stephan Booi is a principal consultant and the head of acoustics at Lustre Consulting Ltd, based in Chatham, Kent. Lustre Consulting is a multi-disciplinary environmental consultancy specialising in acoustics and environmental noise.

Stephan has been involved in the field of acoustics and environmental noise consultancy for over 19 years. Stephan is a member of the Institute of Acoustics.

Over the years, Stephan has undertaken and reviewed numerous environmental noise impact assessments and has given evidence at Planning Committees, including in an advisory role for Kent County Council and Essex County Council, as well as for private developers.

Stephan has visited the site to familiarise himself with the existing environmental noise conditions of the area, make subjective observations and obtain baseline noise measurement data.