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LAND AT GOLD STREET, DA12 3AA

NOISE IMPACT ASSESSMENT

To support the application for an agricultural barn

For: Cobham House Vineyard Ltd
By: Chris Wood MSc MIOA

Application Ref.	Unknown
Our Ref.	231_02R_1-0_CWA
Date:	05 June 2024
Version:	1-0
Status:	FINAL

CONTENTS

1. INTRODUCTION AND SUMMARY

1.1 Chris Wood Acoustics has been commission by the applicant, Cobham House Vineyard Ltd (formerly The Cantina Group Ltd), to undertake a noise impact assessment to support the application for an agricultural winery barn on land at Gold Street, Gravesend DA12 3AA. The barn is to be used as a winery, thus for the processing of grapes harvested on site into wine.

1.2 Since the operation of the barn (as a winery) will require a degree of machinery for commercial purposes, and with residential receptors in the vicinity, the assessment has been undertaken in accordance with **BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound**.

1.3 The assessment, therefore, comprises a baseline sound level survey (over a seven day period from Monday 4th March 2024) in the vicinity of the nearest residential premises (namely Hevers Cottage, Mulberry House, The Briars and Danes Place), calculations of the likely operational sound levels at these premises, and comparison of the two to establish the potential for noise impacts and thus the requirement for noise control measures.

1.4 Key to note is that the development is laid out in order to direct activity to the east, south and west elevations, whilst the majority of operations will take place inside the building and during normal working hours.

1.5 The main exception to this is in terms of the operation of externally mounted chiller plant, which could run on a 24/7 basis. With the proposed careful selection and siting of the plant, however, it has been found that the sound level should be well below the background conditions at night, whereby it is considered that the standard operation of the site should not result in an adverse noise impact. Notwithstanding this, Noise Management Controls are presented in **Section 7**, in order to assist with keeping operational sound levels to a practicable minimum.

1.6 Further to the chiller plant, the atypical scenarios of the initial processing during harvesting and, separately, bottling, have been considered based on a relatively high internal sound level. Bearing in mind this would occur during daytime hours only, it has been found that the resultant sound levels in the vicinity of the nearest properties should be at least 6 dB below the background conditions typically. Accordingly, no more than a low impact is expected, and where further consideration of context, which includes the sound levels being well below the existing ambient conditions and criteria relevant to external amenity areas, indicates that there should be no adverse noise impact.

1.7 Based on the wording in the **National Planning Policy Framework**'s **planning practice guidance** (see **Table B.1** of **Appendix B**), therefore, it is considered that there should be **No Observed Adverse Effect**.

1.8 It is considered, therefore, that planning permission can be granted for the proposed development, subject to suitable noise-related conditions in keeping with the details within this report.

1.9 This report is set out as follows: The assessment methodology is presented in **Section 2**. Descriptions of the site and residential receptors are given in **Section 3**. Details of the proposed scheme are given in **Section 4**. The baseline survey details and results are given in **Section 5**. **Section 6** presents details of the assessment of the operational sound levels in keeping with the guidance in **BS 4142**. **Section 7** presents control measures, whilst the conclusions are given in **Section 8**. A glossary of terms in presented as **Appendix A**, details of the national noise policy are given in **Appendix B**, a letter from Vinescapes is presented in **Appendix C**, whilst the survey results are tabulated in **Appendix D**.

2. ASSESSMENT METHODOLOGY

LOCAL POLICY

2.1 Of most relevance to this assessment, **Policy CS19: Development and Design Principles** of the **Gravesham Local Plan Core Strategy** (adopted September 2014) includes the following requirement:

- New development will be located, designed and constructed to:
  - safeguard the amenity, including privacy, daylight and sunlight, of its occupants and those of neighbouring properties and land;
  - avoid adverse environmental impacts from pollution, including noise, air, odour and light pollution, and land contamination…"

2.2 No references to guidance or criteria are given, however. There are also no noise-related Supplementary Planning Documents or informal guidance. Accordingly, it is understood that the Council has no fixed approach or criteria in this regard, but where, in any case, the relevant British Standard (see below) has been followed, and where assessments should be considered on a case-by-case basis.

NATIONAL NOISE POLICY

2.3 The current national policy regarding "noise" is presented in **Appendix B**. Since, however, the associated documentation does not include detailed assessment methodology or criteria, it is still necessary to refer to applicable guidance documents, as presented below.

BS 4142:2014+A1:2019 METHODS FOR RATING AND ASSESSING INDUSTRIAL AND COMMERCIAL SOUND

2.4 Beyond any local requirements, such assessments (whether for proposed or existing facilities) are typically undertaken following the guidance within **BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound**. This standard doesn't provide a definitive set of criteria for site's to adhere to, but rather presents guidance upon which professional judgement can be drawn (as to the potential for, and degree of, adverse noise impact) on a case-by-case basis. The key guidance from this standard is presented below.

2.5 The assessment methodology evaluates the "specific sound level" of each industrial or commercial sound source, corrects, where required, for distinguishable features to derive the "rating level", and compares this with the "background sound level".

2.6 The advice is that the background sound level ($L_{AF90,T}$) should be derived from continuous measurement of normally not less than 15 minute intervals over the period of interest, and that it should not be the lowest level, but representative of typical conditions at the noise-sensitive receiver(s) relevant to the period(s) of operation.

2.7 The specific sound level ($Ls = L_{Aeq,Tr}$) is obtained (by measurement or calculation) over a reference period of 1 hour in terms of the daytime (07:00 to 23:00) and 15 minutes during the night-time (23:00 to 07:00).

2.8 The rating level ($L_{Ar,Tr}$) is the specific sound level corrected to account for any acoustic features present in the sound in question, as experienced at the receptor, such as distinguishable, discrete, continuous note (a whine, hiss, screech or hum etc.) or distinct impulses (bangs, clatters or thumps etc.). Where no correction is warranted, the rating level is equal to the specific sound level.

2.9 The "subjective method" to calculate the rating level incorporates the following corrections (particularly appropriate for new sources that cannot be measured in-situ):

- up to +6 dB due to tonality, subjectively this might be +2 for a tone that is just perceptible, +4 where it is clearly perceptible and +6 where it is highly perceptible;
- up to+9 dB for impulsivity, subjectively this might be +3 for impulsivity that is just perceptible, +6 where it is clearly perceptible and +9 where it is highly perceptible; and
- up to +3 dB for other acoustic features that are neither tonal nor impulsive, though readily distinctive at the receptor.

2.10 An "initial estimate" of the impact of the specific sound is calculated by subtracting the background sound level from the rating level. The following advice applies:

a) Typically, the greater this difference, the greater the magnitude of the impact.
b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

2.11 Key is the statement "depending on context", since the significance of the sound in question depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs. An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur.

2.12 In this instance, however, where a threshold is stated in a planning condition, there would only be the requirement to further consider context should the threshold be found to be exceeded, despite appropriate control measures, such that there was a need to consider the suitability of the threshold.

2.13 In which case (or when not working to a particular threshold), the assessment should take into account all pertinent factors, including:

- the absolute level of sound;
- the character and level of the residual sound compared to the character and level of the specific sound; and
- the sensitivity of the receptor and whether dwellings will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

2.14 Helpfully, **BS 4142** includes some example assessments. In one example, it is concluded that:

> Although the plant noise is somewhat different in character to the residual acoustic environment the rating level of 30 dB is low and will have little impact on residents using their patio during the evening.

2.15 An assessment, therefore, is effectively in two parts. The first part results in an initial indication of the impact, which is subsequently considered in terms the context unique to the situation at hand; and where this second part may require consideration of alternative guidance and metrics. Alternatively, the context can be considered upfront and a specific threshold (or set of thresholds) determined accordingly in place of the default values presented in points a) to d) quoted above.

BS 8233:2014 GUIDANCE ON SOUND INSULATION AND NOISE REDUCTION FOR BUILDINGS

2.16 The core method in **BS 4142** (outlined above) compares the sound in question with the background conditions (i.e. part one of an assessment). When it comes to part two – taking into account context – it is in keeping with the **BS 4142** guidance to also consider the significance of the absolute level of the commercial/industrial sound. This is typically done in terms of the absolute noise thresholds given in **BS 8223:2014 Guidance on sound insulation and noise reduction for buildings**. This provides guideline values for internal and external noise levels for dwellings.

2.17 It states that, "In general, for steady external noise sources, it is desirable that the internal ambient noise level does not exceed the guideline values in Table 4." This table is reproduced as **Table 2.1** below.

Table 2.1: BS 8233 indoor ambient noise levels for dwellings

Activity	Location	07-23 (Daytime)	23-07 (Night-time)
Resting	Living room	35 dB $L_{Aeq,16h}$	-
Dining	Dining room/area	40 dB $L_{Aeq,16h}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16h}$	30 dB $L_{Aeq,8h}$

2.18 For habitable rooms, the lower guideline value is 35 dB $L_{Aeq,16h}$ during the daytime period, and where the value for bedrooms at night is 30 dB $L_{Aeq,8h}$. Assuming a partially open window providing 15 dB (during use for cooling, for example), the equivalent external level/limit would be in the order of 50 dB during the daytime period and 45 dB during the night-time period. This is a free-field level unaffected by any façade-reflected sound.

2.19 In respect of sound levels within outdoor amenity areas, the guidance in **BS 8233** suggests that, "it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments…"

2.20 **BS 8233** does caution that the internal guideline values are for sources without a specific character, and that where any such characteristics are present, "lower noise levels might be appropriate." Accordingly, when it comes to internal conditions and commercial/industrial sound of any nature, some reduction in the standard values would be considered prudent, subject to context, but where sufficient attenuation would likely be achieved by closing windows should the occupants prefer to do so. Either way, external levels of no more than 50 dB during the day can be seen to be relatively low.

SUMMARY

2.21 In the absence of any specific local guidance or requirements, the assessment has been undertaken based on the guidance in **BS 4142**.

2.22 Based on the guidance in **BS 4142** for an initial estimate of impact, a rating level the same as the background sound level is an indication of a low impact, depending on the context. Whilst, based on the guidance in **BS 8233**, as referenced in **BS 4142**, external levels of no more than 50 dB during the day would meet the external and equivalent internal noise criteria for dwellings (assuming a partially open window).

2.23 Ultimately, therefore, the judgement of noise impact/the potential significance of sound depends on a combination of the background sound level(s), the site-specific contextual factors and/or the absolute sound levels. Accordingly, these are considered in **Section 5**.

3. THE SITE AND ENVIRONS

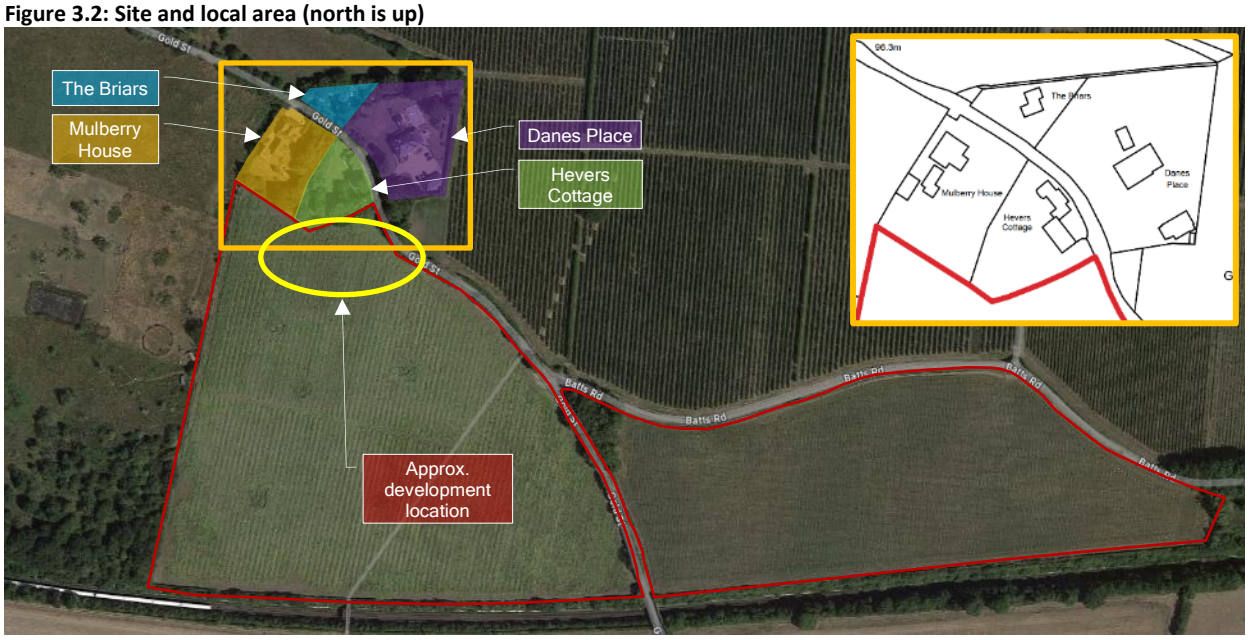
THE SITE AND NEAREST RECEPTOR LOCATIONS

3.1 The site and nearest residential receptors are shown in the figures below and overleaf.

Figure 3.1: Site and wider area (north is up)

Source: Imagery ©2024 Google (annotated by Chris Wood Acoustics)

Figure 3.2: Site and local area (north is up)



Source: Imagery ©2024 Google (annotated by Chris Wood Acoustics) (insert: ©2023 Fluid Planning)

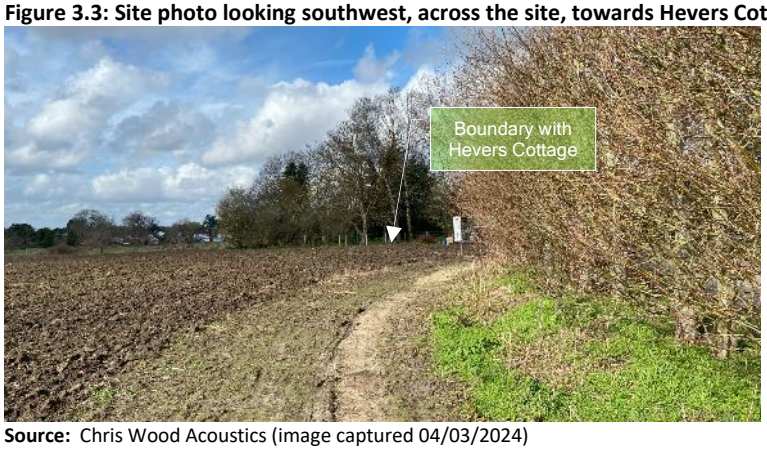
3.2 The nearest residential properties are listed below:

- Hevers Cottage
- Mulberry House
- The Briars
- Danes Place

3.3 The site and nearest residential premises are further shown in the site photographs overleaf.

3.4 The topography in the vicinity of the properties and site is relatively flat, between 99 m AOD (in the region of the site) rising up to 101 m at Danes Place to the north. The land, then, general slopes down towards the railway line to the south, to c94 m (with the railway being in cutting, some 7 m deep).

Figure 3.3: Site photo looking southwest, across the site, towards Hevers Cottage, with Gold Street right

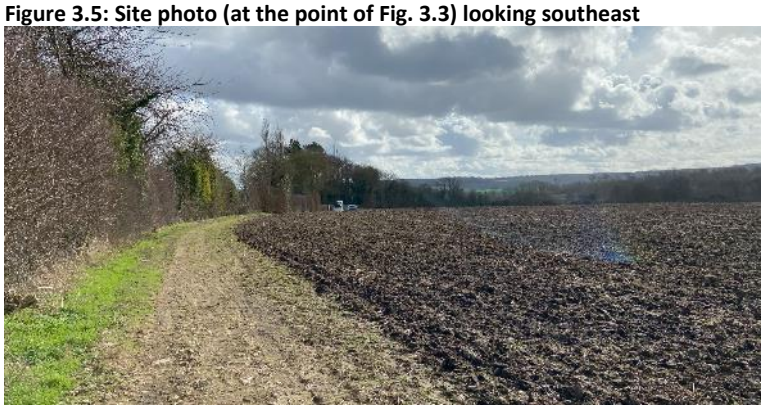


Source: Chris Wood Acoustics (image captured 04/03/2024)

Figure 3.4: Site photo from south of Gold Street (at the point of Fig. 3.3) looking south towards the railway

Source: Chris Wood Acoustics (image captured 04/03/2024)

Figure 3.5: Site photo (at the point of Fig. 3.3) looking southeast



Source: Chris Wood Acoustics (image captured 04/03/2024)

Figure 3.6: Site photo showing southeast boundary with Hevers Cottage (looking north)

Source: Chris Wood Acoustics (image captured 04/03/2024)

Figure 3.7: Site photo showing south boundary with Hevers Cottage (looking northeast)

Source: Chris Wood Acoustics (image captured 04/03/2024)

Figure 3.8: Site photo from south boundary showing Mulberry House (looking north-northwest)

Source: Chris Wood Acoustics (image captured 04/03/2024)

Figure 3.9: Site photo along the south boundary with Hevers Cottage (looking east-southeast)

Source: Chris Wood Acoustics (image captured 04/03/2024)

Figure 3.10: Site photo from lefthand end of the site towards boundaries with Hevers Cottage and Mulberry House

Source: Chris Wood Acoustics (image captured 04/03/2024)

Figure 3.11: Site photo from top corner of the site, towards Hevers Cottage, with Gold Street right

Source: Chris Wood Acoustics (image captured 04/03/2024)

Figure 3.12: Site photo along Gold Street, east of the site (looking northwest)

Source: Chris Wood Acoustics (image captured 04/03/2024)

Figure 3.13: Site photo along Gold Street, outside Hevers Cottage (looking southeast)

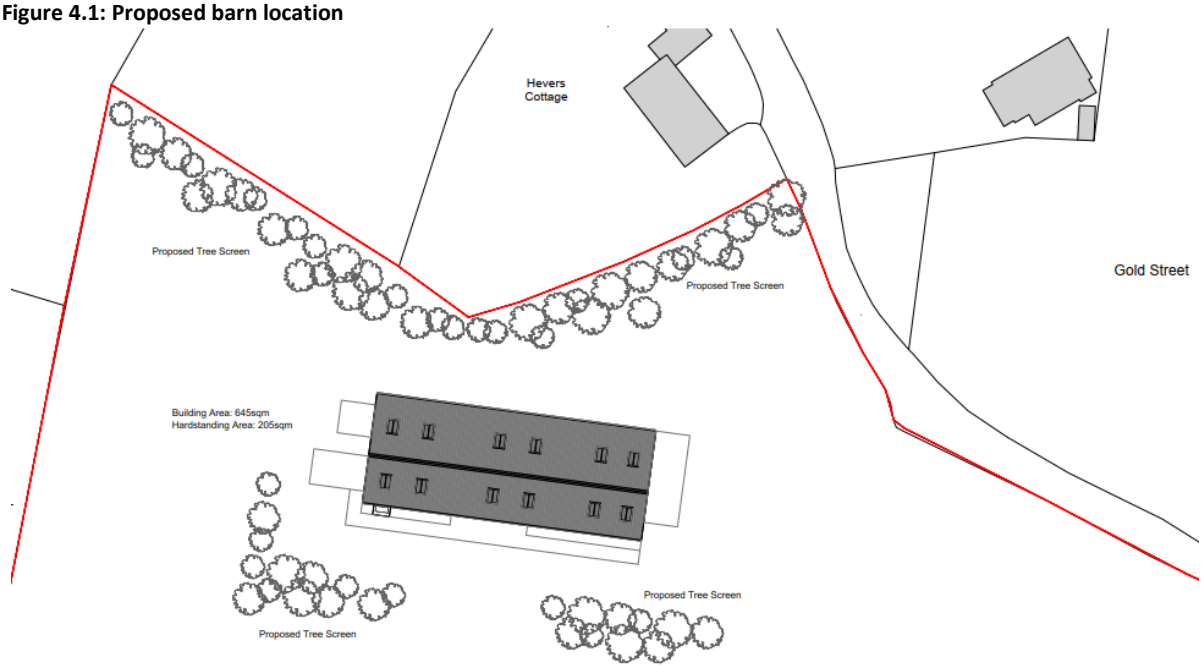
Source: Chris Wood Acoustics (image captured 04/03/2024)

4. SCHEME PROPOSALS

LOCATION AND ELEVATION DRAWINGS

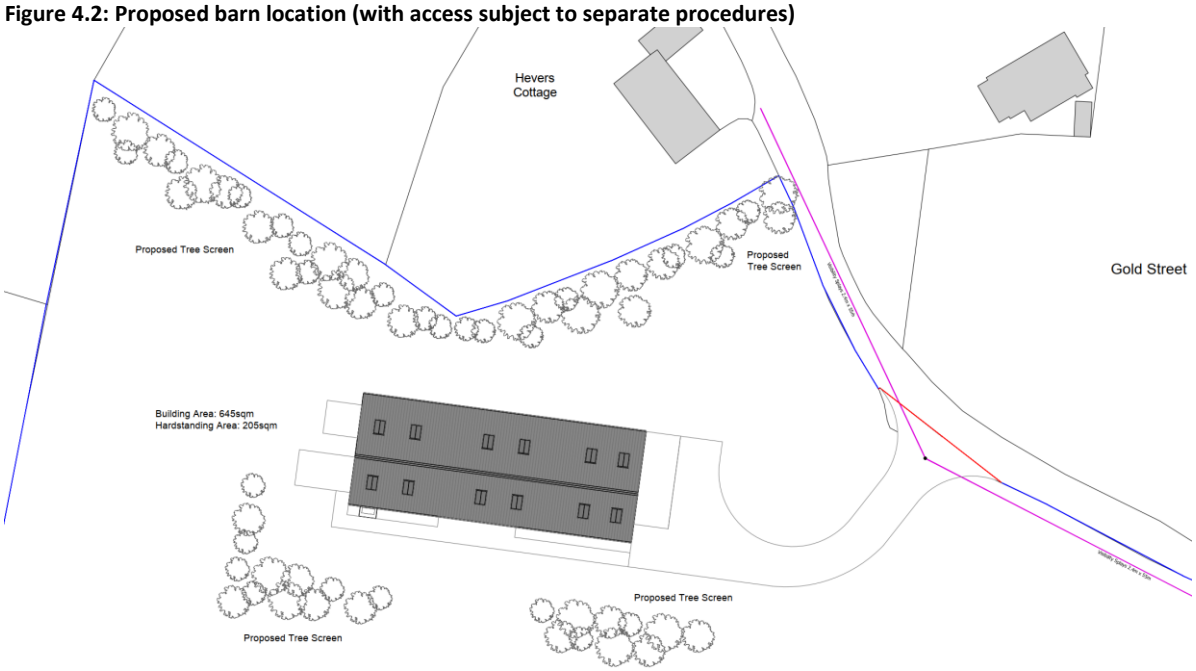
4.1 Drawings showing the proposed barn are presented in the following figures. **Figure 4.1** shows the barn subject to the prior notification under The General Permitted Development Order (as amended), Part 6 Class A. **Figure 4.2** demonstrates the intended future access arrangements subject to separate procedures and outside the scope of the prior notification. It is key to note that the barn in laid out in order to direct activity to the east, south and west elevations.

Figure 4.1: Proposed barn location



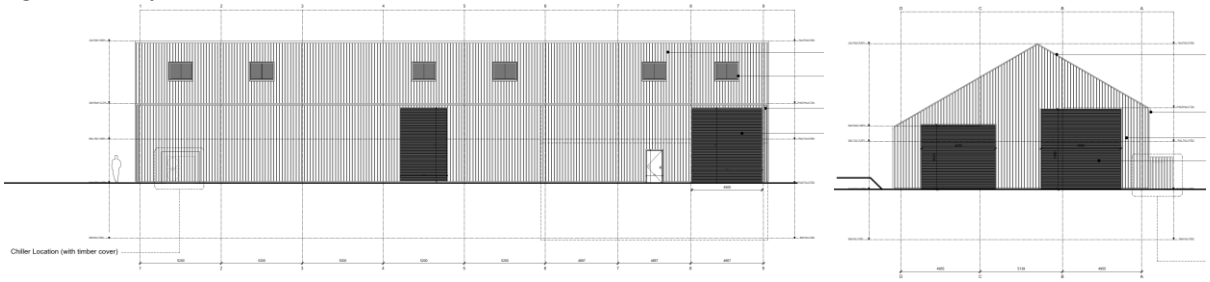
Source: Courtauld & Co. Architects

Figure 4.2: Proposed barn location (with access subject to separate procedures)



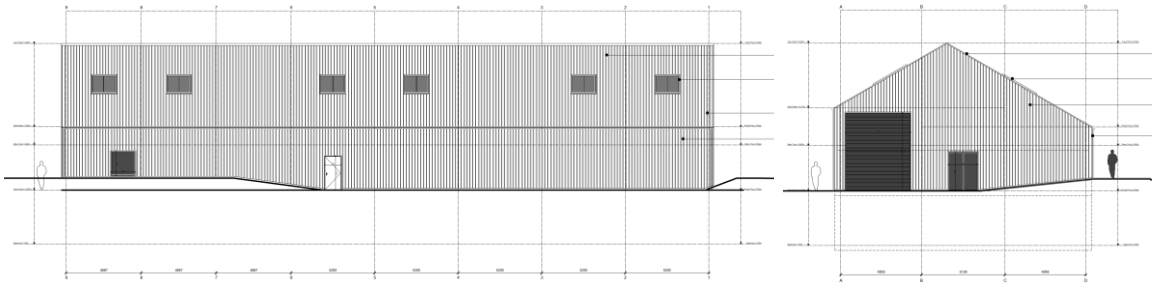
Source: Courtauld & Co. Architects

Figure 4.3: Proposed barn south and west elevations



Source: Courtauld & Co. Architects

Figure 4.4: Proposed barn north and east elevations



Source: Courtauld & Co. Architects

OPERATIONS

4.2 The following has been prepared with support from the CEO of Vinescapes Ltd, Dr Alistair Nesbitt. A letter of his to the applicant is presented within **Appendix C**, in which he states that, "Given the small scale of production the proposed winery at Gold Street would be relatively boutique in scale and from experience of similar wineries I believe it could be managed with limited disturbance to surrounding properties or neighbours in terms of vehicle movements or noise."

4.3 Within the total holding of 11.5 hectares across the two areas indicated in **Figure 3.1**, 8.8 hectares are to be planted with vines, with the grapes transformed into wine within the proposed barn, the winery. The core elements of the vineyard and winery cycles will likely be as follows:

Table 4.1: Core elements of the vineyard and winery cycles

Period	Outside (Vineyard)	Inside (Winery)
Winter (December to March)	Preparing for the growing season (starting in April), including repairs to any trellising, weeding, ploughing, frost protection, planting and pruning.	Primarily tending to last season's or seasons' wine, which may still be fermenting, and possibly to be moved into barrels or other vessels, racked, fined, filtered, blended, bottled and aged, and, ultimately, labelled and packaged. Any sparkling wine will also be riddled, disgorged and corked.
Spring/Summer (April to August)	Scouting for any issues, managing pests or disease, increasing biodiversity, weeding/managing the inter-row and under vine areas.	
Autumn (September to November)	Removing leaves, any desired 'green harvesting', followed by the main harvest – naturally the busiest time of year (likely 1-2 weeks during September/October).	As soon as grapes are available, the processing/wine making starts, initially involving sorting (by hand to remove any bad grapes, leaves or dirt), destemming, and pressing for juice extraction. The juice is then pumped into tanks or barrels to be fermented.

4.4 In the vast majority of instances, work will be by hand, including the harvesting, save for a vehicle to tow the baskets on a trailer to the winery. Furthermore, for the majority of the time, both the vineyard and winery will be relatively inactive, as the vines are either dormant during the winter months, or the grapes growing in the spring and summer months, and the previous season's or seasons' wine is fermenting or aging, which could be over the course of a few months to several years.

4.5 During such times, once at full capacity, there are expected to be up to two full-time staff working normal hours, tending to the wine(s) (or vines), with no processing plant in use.

4.6 The main exception to this, of course, would be during harvesting, which is anticipated to occur during a one- to two-week window in September/October. During which, the grapes will be brought into the winery to start the wine making process, when, as well as there being more staff, longer hours (say 7 am to 7 pm) may be required depending on the weather window available and/or the choice of process.

4.7 This will be one of the main times, therefore, the winery is most active, including in terms of plant items, which are expected to be as per the examples in the figures below.

Figure 4.5: Vibrating sorting table

Figure 4.6: Press impellor pump (for transferring the juice)

Figure 4.7: Whole bunch grape elevator

Figure 4.8: Destemmer (with integrated crusher)

Figure 4.9: Rotary lobe pump (also for transferring the juice)

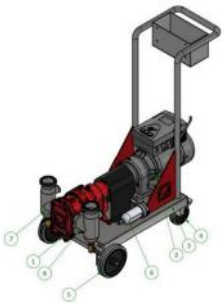


Figure 4.10: Pneumatic press

4.8 The sound from which is discussed in **Section 6**.

4.9 The other (minority of) times of elevated activity within the winery will be during bottling, with, depending on the type of bottling machine, sound from pressure relief valves and the handling of glass bottles.

4.10 Bottling is expected to occur for around five days per year. No images are available at this stage. The sound levels are discussed in **Section 6**.

4.11 In addition to the internal plant, a recirculating chiller with heat pump function will be required externally, such as the example below. This is expected to be paired with a buffer station/tank, which would be located inside.

Figure 4.11: Recirculating chiller with heat pump function (outside)

Figure 4.12: Buffer tank (inside)

4.12 Again, the sound from which is discussed in **Section 6**.

4.13 In addition to which will be vehicle movements, comprising staff cars and vans and small lorries making deliveries and/or collections. Heavy good vehicles (HGVs) are not permitted along Gold Street, and so there will be no such vehicles associated with the operation of the scheme.

4.14 In keeping with the general inactive nature of both the vineyard and winery, vehicle numbers will be highly limited. For the majority of the time, they will be limited to up to two cars/light vehicles belonging to staff.

4.15 Deliveries will be few and far between. The empty bottles, for example, are expected to arrive via up to two or three deliveries (not on the same day). Collections will be similarly infrequent, subject to how they are sold and distributed. Either way, no more than one delivery/collection is expected during any one day, with, typically, no more than one delivery/collection per week on average.

4.16 Details of the assumed activities and sound levels for the key sources are presented in **Section 6**.

5. BASELINE SOUND LEVEL MEASUREMENTS

TIMING, LOCATION AND EQUIPMENT DETAILS

5.1 In order to describe the existing acoustic environment in the vicinity of the neighbouring residential premises, continuous sound level measurements were made at two locations over a seven day period and a three day period, respectively, both starting by **12:00 hours on Monday 4th March 2024**. The positions are shown in the figures below. Position 2 was adopted for a shorter duration being less secure, but where sufficient data was captured, nonetheless. The microphone was approximately 7 m from the site boundary, 9 m from the side of Gold Street.

Figure 5.1: Baseline sound level measurement locations (north is up)

Source: Imagery ©2024 Google (annotated by Chris Wood Acoustics)

Figures 5.2 and 5.3: Position 1

Source: Chris Wood Acoustics (images captured 04/03/2024)

Figures 5.4 and 5.5: Position 2

Source: Chris Wood Acoustics (images captured 04/03/2024)

5.2 As can be seen, the microphones were protected with a windshield and mounted in "free-field" conditions (i.e. away from acoustically reflective surfaces), approx. 1.5 m above the local ground.

5.3 The equipment details are presented in **Table 5.1** below, and where the meters were set to store the 15-minute L_{Aeq} ("ambient"), L_{AF90} ("background") and L_{AFmax} ("maximum") levels, together with the corresponding unweighted frequency spectra in the one-third octave-bands between 20 Hz and 20,000 Hz. The sound pressure levels (L_{Aeq} and L_{eq} in one-third octave-bands) were also obtained at a resolution of 1 second.

5.4 The measurement chain was field-calibrated before the survey using an acoustic calibrator to generate a level of 114.0 dB at 1 kHz. The level was checked at the end of the survey, with no significant drift observed. The meters and calibrator hold valid laboratory calibration certificates.

Table 5.1: Survey equipment details

Equipment (ID) (Pos.)	Make & Model	Serial No.
Sound level meter (SLM1) (1) Microphone / Preamplifier	Svantek 971A ACO 7152 / Svantek SV 18A	121136 84699 / 113784
Sound level meter (SLM2) (2) Microphone / Preamplifier	Svantek 971A ACO 7152 / Svantek SV 18A	131651 85537 / 139344
Sound level calibrator	SV33B	140764

WEATHER CONDITIONS

5.5 The weather conditions during the monitoring have been determined as shown in **Table 5.2** based on forecasts on the BBC website, which were checked and noted daily.

Table 5.2: Summary of weather conditions

Date (Mar '24)	General description (according to BBC website)	Predominant wind direction and speed (mph)		Temperature (degrees Celsius)		Rain?
		Day	Night	High	Low	
Mon 04	Light cloud and a gentle breeze	9	4	10	5	Zero chance
Tue 05	Light rain showers and light winds	5	2	9	4	Low chance in the middle of the day and at night
Wed 06	Misty and light winds	4	4	11	3	High chance in the morning and afternoon
Thu 07	Light cloud and a moderate breeze / Gusty winds and thundery showers	16 40 15	9	12	3	High chance in the morning and afternoon
Fri 08	Light rain and a gentle breeze	9	2	8	-1	Low to medium chance in the middle of the day
Sat 09	Light rain and light winds	2 6 2	2	9	0	Low to medium chance in the middle of the day
Sun 10	Light rain and a gentle breeze	10	40	8	5	Medium chance most of the day and night
Mon 11	Gusty winds and light cloud	45	-	9	1	Zero chance

Note: Multiple wind direction and speed figures are given for the Thursday and Saturday since there was a notable change during the day. On the Thursday, the high speed was only presented for 11 am, with the other figures representative of the conditions typically before and after this hour.

5.6 Whilst there are multiple references to rain, it is understood occurrences were fairly limited – and certainly an improvement on the weeks prior – and where, in any case, it was light. Accordingly, the monitoring is not considered to be adversely affected in this regard.

5.7 In terms of wind speeds, these were generally low, and below the limit of 5 m/s (equivalent to 11 mph) recommended in **BS 4142**, whereby the majority of the monitoring is not considered to be adversely affected. There were times, though, of particularly hight winds, and so the data for these periods is to taken under review.

5.8 Notwithstanding this, in terms of the potential effect on the microphone and local acoustic conditions, the weather conditions for the majority of the time at least are considered conducive to the reliable measurement of sound.

5.9 In terms of wind direction, this can be seen to have been variable during the survey, whereby a range of conditions in this regard – i.e. how the direction may influence the propagation of sound from remote sources – is considered to have been covered.

5.10 With the survey covering a number of days, and different wind speeds and directions, with limited adverse conditions, it is considered that sufficient sound level data have been obtained for the purposes of a robust assessment.

OBSERVATIONS

5.11 Gold Street is generally quiet, with approximately 10 vehicles witnessed during the initial hour on site.

5.12 No trains were heard, which is presumably due to a combination of the reasonable separation distance (from Gold Street) and the trains being in a deep cutting.

5.13 Birdsong was typically the most notable sound, with an occurrence of a light aircraft overhead the loudest sound (other than vehicles on Gold Street). Road traffic noise, presumably from the A2 to the north, was just audible in the distance.

5.14 A commercial aircraft in the distance was also noted at the time, together with tree surgery and a bird scarer in the distance, and a dog barking occasionally at Danes Place. Neither of which were considered likely to influence the measured sound levels at the time significantly, and which wouldn't be present for the majority of the survey. No sound was audible from the nearest gardens at the time of the site visits.

5.15 From audio recordings triggered during the survey, the above appears to describe the soundscape for the majority of the time, typically dominated by birdsong, with a number of instances (during the day) of light and commercial aircraft. At least two instances of petrol lawnmowers in the neighbouring gardens also occurred, together with at least two helicopter events.

5.16 The site itself was inactive, as shown in the site photographs, save for a small cabin that one or two employees are understood to use on an occasional basis.

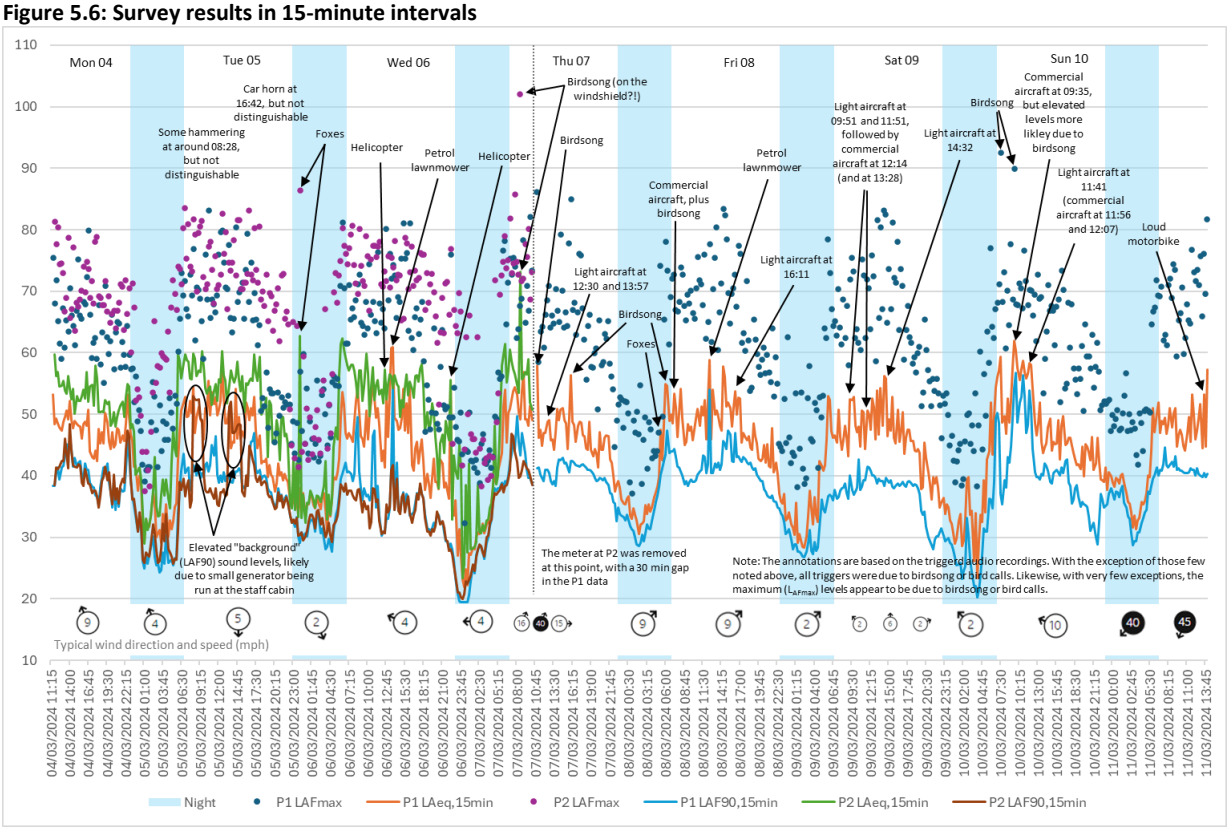
RAW DATA AND INITIAL DISCUSSION

5.17 In the first instance, the 15-minutely data from the measurements are presented in graphical/time-history form in **Figure 5.6** overleaf. To help view the data, blocks have been added to identify the periods typically taken to represent the "night-time" period (23:00 to 07:00), but where no out of hours operation is proposed.

5.18 At this stage in the report, it is a case of attempting to best understand the data and how they may or may not be a factor of the weather conditions or atypical sources, for example. Key observations are highlighted and discussed subsequently.

5.19 The notes provided with the data are based on brief audio recordings that were triggered, as made by the sound level meters. To avoid excessive recording, a threshold of 65 dB ($L_{Aeq,1s}$) was set at Position 1, with a threshold of 75 dB at Position 2 (due to be being close to Gold Street). In the event, the majority triggers were due to birds.

Figure 5.6: Survey results in 15-minute intervals



5.20 When viewing the data it should be noted that: they are in terms of 15-minute periods; that the dots represent the maximum levels each 15-minute period; that orange and green lines represents the "energy average" (ambient) levels; that the light blue and brown lines represents the background levels; and where "loud" events are likely to influence the ambient levels, but not necessarily the background levels, which respond more to regular/continuous events/sources. The following are observed from the data:

- The levels are quite variable, from moment to moment, and day to day. This is consistent with a generally quiet environment, which is more susceptible to variation – especially in a rural environment subject to natural sounds.
- There are two brief instances (on the Tuesday) when the background levels at Position 2 are notable different, which is likely to be due to the use of a small generator at the cabin in the vicinity. It is understood that the staff were around very little during the week, hence there are no similar events on the other days' monitoring at Position 2. Position 1 being unaffected in this regard.
- The ambient (L_{Aeq}) levels are generally higher at Position 2 (represented by the green line). This is likely to be due to this positions proximity Gold Lane.
- Conversely, the background (L_{AF90}) levels are generally similar, and where they are actually higher at Position 1 at times. Such occasions are considered to be mostly due to additional birdsong to the rear of the nearest properties, but also instances of petrol lawnmower use.
- Maximum (L_{AFmax}) levels were regularly above 80 dB due to birdsong and calls.
- With the levels during the day being so variable, it is difficult to see if there is any correlation with the weather conditions. Whilst not relevant to the assessment, the same is generally true at night, but where there the variation in how low the background levels reach at night is likely to be related to the weather conditions, be it the direction affecting the influence of the A2 road traffic (from the north), for example, or the speed generating sound from trees etc. and/or across the microphone.

5.21 The data is processed and considered further below.

PROCESSED AMBIENT (LAEQ) AND BACKGROUND (LAF90) SURVEY DATA

5.22 In keeping with **BS 4142** methodology, the measured $L_{AF90,15min}$ levels have been used to determine what could be considered the typical/representative background sound level(s) per periods of interest. Since, however, the full 24-hour period is being considered here for completeness, and presenting the data on a 15-minute period basis is cumbersome, the values per hour have been arithmetically average to determine a single value per hour. Note in particular, however, that the mode (most commonly occurring) values are based on the 15-minute data.

5.23 It is also useful to consider the ambient conditions, for which hourly periods are more commonly of interest (in keeping with the **BS 4142** period applicable to specific and rating levels). Accordingly, the 15-minute period values have been logarithmically average per hour to determine the equivalent hourly values.

5.24 Accordingly, the $L_{Aeq,1h}$ levels and average $L_{AF90,15min}$ levels per hour are as presented in the tables overleaf, together with a summary of values for key periods. For the $L_{AF90,15min}$ levels, to assist with determining the levels typically, the mode values have been determined for the daytime (07-19) and night-time (23-07) periods. Where more than one mode was found, the lowest is presented. Note that the night-time data are only required on account of the potential for the chiller plant to operate on a 24/7 basis. Otherwise, the daytime (07-19) data apply; the evening average levels are presented for interest only.

5.25 The levels (across the two positions) have been condition formatted in Microsoft Excel using the default Red – Yellow – Green colours to show the range in levels across the hours and days. They are not related to any particular thresholds – just a comparison of the data presented. The summary values have been formatted separately from the main data.

Table 5.3: Summary of the ambient ($L_{Aeq,1h}$) sound levels (free-field) – Position 1

Day (Mar. '24)	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00	$L_{Aeq,16h}$ (07-23)	$L_{Aeq,8h}$ (23-07)
Mon 4/Tue 5					51	48	50	50	48	49	44	46	48	45	47	50	44	38	32	35	32	33	34	49	48	42
Tue 5/Wed 6	51	51	49	52	52	54	49	50	47	51	50	44	41	40	40	38	36	36	36	36	36	35	41	51	49	43
Wed 6/Thu 7	46	52	48	52	51	48	58[1]	48	51	49	44	43	40	40	40	49	32	23	28	31	32	38	42	51	50	43
Thu 7/Fri 8	53	52	53	50	53	48	46	50	48	52	48	46	44	45	46	40	37	36	34	32	35	37	46	53	50	45
Fri 8/Sat 9	51	51	47	49	51	54	51	55	51	52	49	45	46	43	45	40	36	33	32	29	35	38	43	51	50	43
Sat 9/Sun 10	48	46	51	47	50	51	52	54	50	48	48	46	43	43	38	38	35	31	32	37	33	31	41	51	49	43
Sun 10/Mon 11	57[2]	50	59[3]	57[3]	57[3]	54[3]	49	47	45	48	46	43	42	44	44	40	40	39	40	36	32	35	41	50	53	43
Mon 11	49	49	49	46	50	48	50																			
Wkday Ave.	50	51	49	50	51	50	51	51	49	51	47	45	44	43	44	43	37	33	32	33	34	36	41	51	49	43

1. Petrol lawnmower; 2. Notable birdsong; 3. Combination of birds, light aircraft and commercial aircraft.

Table 5.4: Summary of the ambient ($L_{Aeq,1h}$) sound levels (free-field) – Position 2 (near Gold Street)

Day (Mar. '24)	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00	$L_{Aeq,16h}$ (07-23)	$L_{Aeq,8h}$ (23-07)
Mon 4/Tue 5						56	55	53	53	54	55	53	52	49	51	53	47	40	32	39	37	37	45	58	52	50
Tue 5/Wed 6	58	58	58	54	53	57	55	57	54	55	57	55	51	47	48	43	40	57[1]	36	36	39	35	51	61	55	54
Wed 6/Thu 7	58	56	57	55	54	54	56	54	54	54	56	54	50	44	47	50	42	33	36	34	32	43	52	59	54	51
Thu 7/Fri 8	59	67[2]	57	51																						
Wkday Ave.	58	60[3]	57	53	54	56	55	55	54	54	56	54	51	47	49	49	43	43	35	36	36	38	49	59	54	52

1. Foxes; 2. Birdsong very close to microphone; 3. Excluding highest level.

Table 5.5: Difference between ambient ($L_{Aeq,1h}$) sound levels at Position 1 (Table 5.3) and Position 2 (Table 5.4)

Day (Mar. '24)	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00	$L_{Aeq,16h}$ (07-23)	$L_{Aeq,8h}$ (23-07)
Mon 4/Tue 5						8	5	3	5	5	11	7	4	4	4	3	3	2	0	4	5	4	11	9	4	8
Tue 5/Wed 6	7	7	9	2	1	3	6	7	7	4	7	11	10	7	8	5	4	21[1]	0	0	3	0	10	10	6	11
Wed 6/Thu 7	12	4	9	3	3	6	-2	6	3	5	12	11	10	4	7	1	10	10	8	3	0	5	10	8	4	8
Thu 7/Fri 8	6	15[1]	4	1																						
Wkday Ave.	8	9	10	4	3	2	4	0	3	2	7	9	5	4	4	9	7	10	3	7	1	0	6	8	4	9

1 These higher levels are due to the foxes (Tue at midnight) and notable birdsong (Thu at 8 am) influencing the L_{Aeq} levels more than the L_{AF90} levels.

5.26 It can be seen that, as to be expected, the levels closest to Gold Street, Position 2, are typically higher than those away from Gold Street. The daytime levels are in keeping with the target range given with **BS 8233** for residential outdoor amenity areas (i.e. 50 to 55 dB $L_{Aeq,T}$). Assuming a partially open window, the average of the night-time levels would equate to internal levels of around 28 and 37 dB. The levels to the rear of the properties, therefore, as represented by Position 1, are in keeping with the default criterion for bedrooms of 30 dB. Levels of up to 35 dB are also said to be "reasonable", which the Position 2 levels are similar to. The internal levels would be lower still with windows closed. The equivalent L_{AF90} (background) data are presented overleaf.

Table 5.6: Summary of the background ($L_{AF90,15min}$) sound levels (free-field) – Position 1

Day (Mar. '24)	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00	Day Ave. (07-19)	Eve Ave. (19-23)	Night Ave. (23-07)	Day Mode (07-19)	Night Mode (23-07)
Mon 4/Tue 5					38	41	43	43	41	41	38	37	40	36	37	40	35	29	26	27	25	26	26	37	40	38	29	42	26
Tue 5/Wed 6	40	40	40	42	43	40	39	40	39	39	42	40	38	36	36	34	32	30	32	32	29	29	33	41	40	36	32	41	31
Wed 6/Thu 7	40	42	37	37	36	31	34	35	36	34	37	34	31	33	30	28	20	19	22	28	28	33	38	39	36	31	28	37	38
Thu 7/Fri 8	44	45	41	39	40	40	39	42	41	42	42	41	40	39	38	35	34	33	30	29	31	34	39	44	41	38	34	42	33
Fri 8/Sat 9	42	40	39	39	41	41	41	42	44	43	43	42	40	38	37	35	32	29	28	27	28	29	35	37	41	38	31	42	28
Sat 9/Sun 10	37	38	37	38	39	41	39	39	38	39	39	39	36	32	29	31	30	28	25	26	23	21	31	37	39	32	28	39	30
Sun 10/Mon 11	37	40	49[1]	53[1]	49[1]	41	40	40	40	41	40	37	36	33	30	35	36	37	37	32	29	32	36	40	42	34	35	41	37
Mon 11	42	42	42	41	41	41	40																						
Wkday Ave.	42	42	40	40	40	39	39	40	40	40	40	39	38	36	36	34	31	28	28	29	28	30	34	40	40	36	31	41	31

1 Combination of birds, light aircraft and commercial aircraft.

Table 5.7: Summary of the background ($L_{AF90,15min}$) sound levels (free-field) – Position 2

Day (Mar. '24)	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00	Day Ave. (07-19)	Eve Ave. (19-23)	Night Ave. (23-07)	Day Mode (07-19)	Night Mode (23-07)
Mon 4/Tue 5						42	43	43	41	40	38	37	40	37	38	43	36	29	27	29	27	29	26	36	41	40	30	42	26
Tue 5/Wed 6	37	44	49[1]	38	37	37	38	47[1]	38	40	40	39	37	35	36	33	32	30	32	33	31	30	33	38	39[2]	35	32	37	33
Wed 6/Thu 7	37	37	35	33	35	31	35	35	35	34	36	33	31	33	30	27	21	21	24	28	28	33	37	38	35	30	29	36	37
Thu 7/Fri 8	43	40	42	39																									
Wkday Ave.	39	40	39[2]	37	36	37	39	39[2]	38	38	38	36	36	35	35	34	30	27	28	30	29	31	32	37	38	35	30	38	32

1 Likely due to a small generator being run at the staff cabin on site.
2 Excluding noted data.

Table 5.8: Difference between background ($L_{AF90,15min}$) sound levels at Position 1 (Table 5.6) and Position 2 (Table 5.7)

Day (Mar. '24)	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00	Day Ave. (07-19)	Eve Ave. (19-23)	Night Ave. (23-07)	Day Mode (07-19)	Night Mode (23-07)
Mon 4/Tue 5						1	0	0	0	-1	0	0	0	1	1	3	1	0	1	2	2	3	0	-1	1	2	1	0	0
Tue 5/Wed 6	-3	4	9[1]	-4	-6	-3	-1	7[1]	-1	1	-2	-1	-1	-1	0	-1	0	0	0	1	2	1	0	-3	-1	-1	0	-4	2
Wed 6/Thu 7	-3	-5	-2	-4	-1	0	1	0	-1	0	-1	-1	0	0	0	-1	1	2	2	0	0	0	-1	-1	-1	-1	1	-1	-1
Thu 7/Fri 8	-1	-5	1	0																									
Wkday Ave.	-3	-2	-1	-3	-4	-2	0	-1	-2	-2	-2	-3	-2	-1	-1	0	-1	-1	0	1	1	1	-2	-3	-2	-1	-1	-3	1

1 These higher are likely due to a small generator being run at the staff cabin on site influencing the levels at Position 2 and not at Position 1.

5.27 It can be seen that, contrary to the ambient ($L_{Aeq,1h}$) data, if anything, the background levels are slightly higher, typically, at Position 1, which is considered due to more natural sounds present behind the nearest properties. At only 1 or 2 dB on average, however, conditions could be said to be essentially the same.

5.28 Lastly, tables presenting the difference between the ambient and background levels per position are presented overleaf.

Table 5.9: Difference ambient (L_{Aeq}) (Table 5.3) and background (L_{AF90}) (Table 5.6) sound levels – Position 1

Day (Mar. '24)	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
Mon 4/Tue 5					13	7	7	7	7	8	6	9	8	9	10	10	9	9	6	8	7	7	8	12
Tue 5/Wed 6	11	11	9	10	9	14	10	10	8	12	8	4	3	4	4	4	4	6	4	4	7	6	8	10
Wed 6/Thu 7	6	10	11	15	15	17	24[1]	13	15	15	7	9	9	7	10	21[1]	12	4	6	3	4	5	4	12
Thu 7/Fri 8	9	7	12	11	13	8	7	8	7	10	6	5	4	6	8	5	3	3	4	3	4	3	7	9
Fri 8/Sat 9	9	11	8	10	10	13	10	13	7	9	6	3	6	5	8	5	4	4	4	2	7	9	8	14
Sat 9/Sun 10	11	8	14	9	11	10	13	15	12	9	9	7	7	11	9	7	5	3	7	11	10	10	10	14
Sun 10/Mon 11	20[1]	10	10	4	8	13	9	7	5	7	6	6	6	11	14	5	4	2	3	4	3	3	5	10
Mon 11	7	7	7	5	9	7	10																	
Wkday Ave.	8	9	9	10	12	11	11	10	9	11	7	6	6	6	8	9	6	5	5	4	6	6	7	11

1 These higher levels are where the petrol lawnmower (Wed at 1 pm), a helicopter (Wed at 10 pm) and notable birdsong (Sun at 7 am) influenced the L_{Aeq} levels more than the L_{AF90} levels.

Table 5.10: Difference ambient (L_{Aeq}) (Table 5.4) and background (L_{AF90}) (Table 5.7) sound levels – Position 2

Day (Mar. '24)	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
Mon 4/Tue 5						14	12	10	12	14	17	16	12	12	13	10	11	11	5	10	10	8	19	22
Tue 5/Wed 6	21	14	9	16	16	20	17	10	16	15	17	16	14	12	12	10	8	27[1]	4	3	8	5	18	23
Wed 6/Thu 7	21	19	22	22	19	23	21	19	19	20	20	21	19	11	17	23[1]	21	12	12	6	4	10	15	21
Thu 7/Fri 8	16	27[1]	15	12																				
Wkday Ave.	19	20	15	17	18	19	17	13	16	16	18	18	15	12	14	14	13	17	7	6	7	8	17	22

1 These higher levels are where the foxes (Tue at midnight), a helicopter (Wed at 10 pm) and notable birdsong (Thu at 8 am) influenced the L_{Aeq} levels more than the L_{AF90} levels.

5.29 The differences presented in the two tables above provide an idea of how the relationship between the L_{Aeq} and L_{AF90} levels can vary (in the absence, typically, of any sound from the site in question), bearing in mind that the **BS 4142** assessment methodology requires the comparison of the site sound in L_{Aeq} against the background sound in L_{AF90}. The theory being that, together with any required penalty for notable acoustic characteristics, a difference between the two can indicate the potential for noise impact. In practice, however, the background level(s) will naturally be exceeded on a regular basis, regardless of activity on the site in question; though, not necessarily by "unwanted" sources. Notwithstanding this, it can be seen that differences of more than 5 dB are typical, extending to 18 dB at Position 1 and 23 dB at Position 2 (ignoring the atypical data).

5.30 In terms of selecting values to represent the daytime and night-time background conditions typically, taking into account the conditions at both positions (as per **Tables 5.6** and **5.7**), such values would appear to be in the region of:

- Daytime: **40dB** ($L_{AF90,15min}$)
- Night-time: **31 dB** ($L_{AF90,15min}$)

5.31 At Position 1 the daytime mode values ranged from 37 to 42 dB, with a weekday average of 41 dB. At Position 2, the mode values ranged from 36 to 42, with an average of 38 dB. 40 dB, therefore, is considered to be a fair balance between the two sets. At night, across both positions, the mode values ranged from 26 to 37/38 dB, with weekday averages of 31 dB and 32 dB at the two positions. 31 dB, therefore, is considered to be a fair reflection of the data.

5.32 In terms of the ambient conditions, based on the levels presented in **Tables 5.3** and **5.4**, it is considered that levels of 49 dB and 54 dB ($L_{Aeq,T}$) are representative of the daytime residual conditions typically at locations in keeping with positions 1 and 2, respectively. At night, the equivalent levels were 43 and 52 dB.

5.33 The relevance of the above values in relation to the proposed scheme is considered further in **Section 6**.

6. NOISE ASSESSMENT

ACOUSTIC MODEL CONSTRUCTION AND ASSESSMENT SCENARIOS

6.1 In order to consider the potential sound emissions from the barn, a computerised 3D acoustic model of the site and surrounding area has been constructed in the proprietary software 'IMMI'.

6.2 The topography has been determined from open-source LiDAR DTM data at 1 m resolution.

6.3 An aerial image from Bing Maps was imported into the model, together with the site plans. The barn was digitised by hand (forced rectangular), and assigned as acoustically reflective. No other buildings or structures have been modelled as not being that material to the assessment. All ground was set as acoustically soft.

6.4 In terms of assessment scenarios, the guidance in **BS 4142** is that, "*The specific sound should as far as is practicable be representative of typical operating conditions.*" As per the descriptions of the operations given in **Section 4**, operations typically, for the vast majority of the year, will be very limited indeed – largely associated with arrival and departure of staff, and non-mechanised activities within the winery and/or in the vineyard. The only regular source of sound will be the externally mounted chiller plant, which will, at times, be required on a 24-hour basis.

6.5 Essentially, therefore, discounting the momentary sound of a limited number of cars leaving or departing, the typical operating conditions are considered to be limited to the operation of the chiller plant.

6.6 Beyond which will be the atypical conditions during harvesting and bottling. Likely representing a combined period of three weeks throughout the year, it could be argued that the need for assessment is limited. However, in addition to considering the chiller plant, a scenario has been considered of elevated sound levels within the winery as worst case.

6.7 What is not considered, however, is any additional (external) sounds associated with the harvesting or deliveries or collections. In terms of harvesting, apart from being during daytime hours, for a limited period, and largely by hand, it could also be taken as part and parcel of living next to arable land. In terms of deliveries and collections, which will occur during normal working hours only and limited to non-HGVs, occurrences will be too few to be of any potential significance. Notwithstanding this, the site will be operated in a neighbourly manner, as per the recommendations in **Section 7**.

6.8 Accordingly, the assessment scenarios are as follows:

1. **Chiller plant operating up to 24-hours per day, seven days per week**.
2. **Elevated sound levels within the winery during initial processing or bottling** (plus **Scenario 1**).

6.9 In terms of associated sound levels, the sound power level for the chiller plant likely to be used is 77 dB ($L_{Aeq,T}$)[1]. This is equivalent to a sound pressure level at 1 m of no more than 69 dB. The manufacturer data states a level of 60 dB at 1 m, but where the sound power level has been applied in the model as worst case.

6.10 No such data are available for the internal plant, but where, based on general experience, sound pressure levels within the winery are highly unlikely to exceed 75 dB ($L_{Aeq,T}$). (For the most part, they would be no more than 55 dB.) To put this level (75 dB) into perspective, it is 5 dB below the "lower exposure action" value within **The Control of Noise at Work Regulations 2005** (whereby there would no requirement to provide hearing protection). It is also equal to the highest limit typically applied to construction works, as assessed immediately outside dwellings. It is also well above the value recommended for reliable speech communication at a talker/listener distance of 1 m. In other words, it is not an insignificant/low level.

[1] Based on data for a Prochill PCH25 HE unit.

6.11 The modelling software includes the option to input an internal sound pressure level (which is converted to an internal sound power level) and assign sound insulation performance values (of the building envelope elements), which, together, the software converts into a sound power levels per unit of surface area, which are applied to the surfaces of the building in the form of area sources.

6.12 In terms of the sound insulation performance of the building envelope, the following have been assumed:

- Kingspan KS1150 RF F wall panels (80 mm core): 32 dB R_w.
- Kingspan QuadCore® KS1000RW roof panels: 25 dB R_w.
- Double-skinned polyester with a polyurethane foam core shutters: 22 dB R_w.

6.13 Since the winery is a hygiene-sensitive environment, it can be assumed that either the shutters or internal doors will be closed during processing. Five shutters of various sizes are proposed for the barn (as shown in **Figures 4.2** and **4.3**): two in the south (front) and west elevation; and one in the east elevation, which have been included in the model. As worst case, the processing and bottling have been assumed to occur within the barn as if it's not compartmentalised, whereby all the walls and roof will be subject to the sound.

6.14 In terms of the chiller plant, a point source at 1 m above the ground has been added into the model outside the south elevation of the barn, at the western end, thus full screening (by the barn) is provided to all receptors. It is assumed the plant would be mounted on an area of hardstanding.

NOISE MODEL RESULTS (CALCULATED SPECIFIC SOUND LEVELS)

6.15 The model was run to calculate the resultant single-figure, A-weighted sound pressure levels in accordance with the procedures within **ISO 9612-2:1996 Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation**, considered equivalent to the typical specific sound levels. In terms of meteorological conditions, the default settings of 10°C, 70% relative humidity and a wind speed of 3 m/s were adopted. This is standard procedure, and whereby the conditions should be representative of moderately adverse conditions in terms of sound propagation. In which case, they would more likely be less than predicted, than higher.

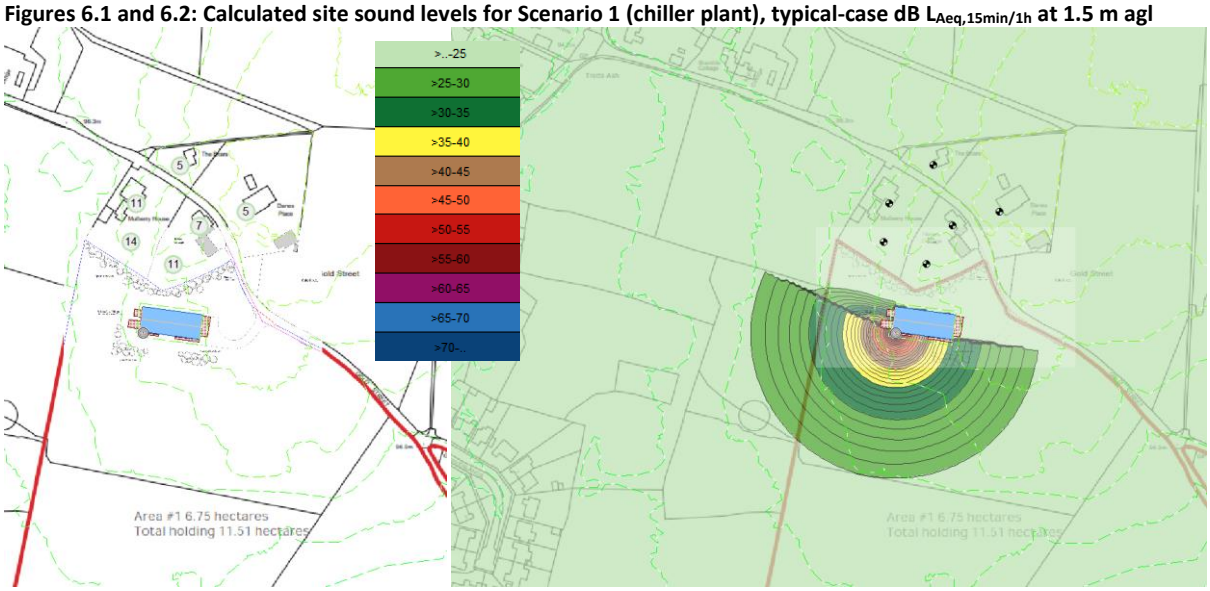
6.16 Calculation points were entered into the model to represent the gardens at 1.5 m above ground level and the dwellings at 1.5 m and 4.5 m above ground level.

6.17 The calculated sound levels covering both scenarios are presented in **Figures 6.1** to **6.4** overleaf.

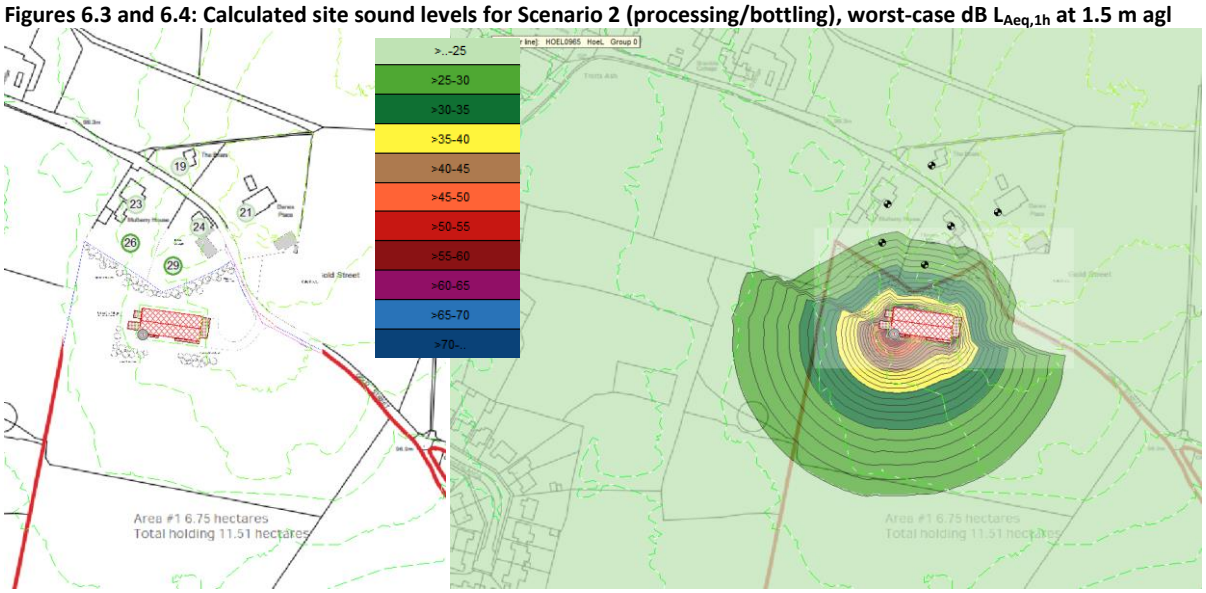
6.18 The plots show the spread of sound from the site, as well as the values at the aforementioned locations. When reviewing the contours and values, it should be borne in mind that they only show sound from the site, and not from any other background or ambient sources. They also do not contain any account for any character to the sound. This is addressed separately in order to determine the equivalent rating levels.

6.19 The ground height contours (at 1 m intervals) are shown in the figures as dashed green lines.

Figures 6.1 and 6.2: Calculated site sound levels for Scenario 1 (chiller plant), typical-case dB $L_{Aeq,15min/1h}$ at 1.5 m agl



Figures 6.3 and 6.4: Calculated site sound levels for Scenario 2 (processing/bottling), worst-case dB $L_{Aeq,1h}$ at 1.5 m agl



6.20 The calculated sound levels are summarised in the table overleaf.

Table 6.1: Summary of calculated site sound levels, dB

Property	Receiver location	Calculate site sound level, $L_{Aeq,15min/1h}$	
		Scenario 1 (chiller plant) (day & night)	Scenario 2 (processing/bottling plus chiller plant) (day only)
Hevers Cottage	Garden (at 1.5 m agl)	11	29
	Ground floor (at 1.5 m agl)	7	23
	First floor (at 4.5 m agl)	7	24
Mulberry House	Garden (at 1.5 m agl)	14	26
	Ground floor (at 1.5 m agl)	11	22
	First floor (at 4.5 m agl)	11	23
The Briars	Ground floor (at 1.5 m agl)	5	18
	First floor (at 4.5 m agl)	5	19
Danes Place	Ground floor (at 1.5 m agl)	5	20
	First floor (at 4.5 m agl)	5	21

6.21 The calculated sound levels are considered in terms the **BS 4142** assessment methodology below, starting with determining the initial estimates of impact, subject to context.

INITIAL ESTIMATES

SCENARIO 1 (CHILLER PLANT)

6.22 In terms of an assessment in accordance with **BS 4142**, it is a question of determining the relevant background, specific and rating levels.

6.23 From **Tables 5.5** and **5.6**, it was concluded (following the tables) that the daytime and night-time background conditions typically are in the order of 40 dB and 31 dB ($L_{AF90,15min}$), respectively.

6.24 From the acoustic model, it has been determined that the highest sound levels within the main amenity areas and outside the ground and first floors of the nearest properties could be up to in the region of 14 dB ($L_{Aeq,15min/1h}$). This is representative of the typical-case specific sound level from the site, without any required character correction. In this regard, a character correction wouldn't always be applied to chiller-type plant, in the absence of being particularly characterful, and where, in this case, the specific levels are so far below the background and ambient levels, a correction is unlikely to be warranted. Furthermore, any applicable correction would not change the outcome of the assessment – the rating level would remain well below the background sound level.

6.25 Accordingly, the following advice in **BS 4142** applies: "Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."

6.26 Context is considered further below (following **Scenario 2**).

SCENARIO 2 (PROCESSING/BOTTLING, PLUS CHILLER PLANT)

6.27 From **Tables 5.5** and **5.6**, it was concluded that weekday background conditions typically appear to be in the order of 40 dB ($L_{AF90,15min}$).

6.28 From the acoustic model, it has been determined that highest sound levels within the main amenity areas and outside the ground and first floors of the nearest properties could be up to in the region of 29 dB ($L_{Aeq,1h}$). This is representative of the worst-case specific sound level from the site, without any required character correction. In this regard, bearing in mind the scenario as if sound is breaking out from the building, it is considered that limited correction would apply. As a broadly worst case assumption, therefore, a correction of 5 dB could be deemed to apply.

6.29 Accordingly, the worst-case rating level for the atypical operations is calculated to be 34 dB ($L_{Ar,1h}$). This is, therefore, 6 dB below the adopted background level. Accordingly, same advice as above applies: "Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."

CONTEXT AND FINAL APPRAISAL

6.30 In terms of context, **BS 4142** recommends that consideration be given to:

1) the absolute level of sound;
2) the character and level of "residual sound" compared to the character and level of the specific sound; and
3) the sensitivity of the receptor and whether design measures are in place that secure good acoustic conditions (such as façade insulation treatment).

SCENARIO 1 (CHILLER PLANT)

6.31 In terms of the first point, it is discussed following **Table 2.1** (as per the targets in **BS 8233**) that external levels of up to 45 dB should be acceptable for residential amenity at night, but where lower levels might be appropriate for sources with specific character. The latter case is not necessarily true in terms of the chiller plant, but where, in any case, the specific level (i.e. up to 14 dB) is so far below this threshold that whatever lower level might be deemed appropriate would be met. The equivalent internal levels would be below 5 dB, and thus more than 25 dB below the default criterion for bedrooms at night.

6.32 The "residual sound" referenced in the second point relates to the ambient ($L_{Aeq,T}$) sound conditions in the absence of the site activities, where both the "level" and "character" are of interest. Typically, the residual sound levels are expected to be in the range 32 to 51 dB ($L_{Aeq,1h}$), as per the data in **Table 5.3** for Position 1 (with higher levels at Position 2). Since the calculated site levels are well below this range, there is limited likelihood of the plant being noticeable.

6.33 In terms of the character of the residual sound, specifically at night, there is expecting to be no equivalent sounds present, whereby the chiller plant could not be said to be in keeping with the existing soundscape, but where, at such a low sound level, and with such variable residual conditions, it's expected that the sound will be masked, nonetheless.

6.34 The third point applies where the receptors in question are more or less sensitive to noise than would typically be the case. In the absence of potentially significant sound levels currently (which is not expected to change), there is no reason to expect that the properties are any better protected against external sound than normal, whereby they would be sensitive to external sound in the normal way. In other words, it is to be expected that windows are used for ventilation and/or cooling purposes. As discussed above, however, under such conditions, resultant internal levels would still be well below the recommended criterion for bedrooms.

6.35 Overall, therefore, with the specific sound levels being well below the existing background and residual conditions, and the equivalent external criterion for bedrooms (with a window partially open), it is considered that the normal operation of the site should not result in an adverse noise impact. Whilst, based on the wording in the **NPPF**'s **PPG-N** (see **Table B.1** of **Appendix B**), it is considered that there should be **No Observed Effect**.

6.36 Accordingly, no specific measures are required, and it is considered that operating the site as proposed would be in keeping with national noise policy.

6.37 Notwithstanding this, Noise Management Controls are presented in **Section 7**, in order to assist with keeping operational sound levels to a practicable minimum.

SCENARIO 2 (PROCESSING/BOTTLING, PLUS CHILLER PLANT)

6.38 In terms of the first point on context, it is discussed following **Table 2.1** (as per the targets in **BS 8233**) that daytime external levels of up to 50 dB should be acceptable for residential amenity, but where lower levels might be appropriate for sources with specific character. The latter case is not necessarily true in terms of any internal activity sound breaking out, but where, in any case, both the specific and rating levels (i.e. 29 dB and 34 dB), respectively, are well below this threshold.

6.39 As above. the "residual sound" referenced in the second point on context relates to the ambient ($L_{Aeq,T}$) sound conditions in the absence of the site activities, where both the "level" and "character" are of interest. Typically, the residual sound levels are expected to be in the range 45 to 51 dB ($L_{Aeq,1h}$), as per the data in **Tables 5.3** for Position 1 (with higher levels for Position 2). Since the calculated site levels are well below this range, the likelihood of the site being noticeable is much reduced.

6.40 In terms of the character of the residual sound, specifically during the day, there are no "commercial" sounds present, whereby any sound breaking out of the barn could not be said to be in keeping with the existing soundscape, but where, at a very low level, and with variable residual conditions, it's expected that the sound will be masked, nonetheless.

6.41 The third point applies where the receptors in question are more or less sensitive to noise than would typically be the case. As discussed above, it is safe to assume that the receptors are sensitive to external sound in the normal way, whereby windows are used for ventilation and/or cooling purposes, and where conditions are conducive to enjoyment of the outdoor amenity areas. As discussed above, however, the sound levels from site are calculated to be well below relevant criteria, and where any sounds should, largely, be barely audible, if at all, including for the atypical conditions.

6.42 Overall, therefore, with the specific and rating levels well below the existing residual conditions typically and the equivalent external criteria, it is considered that the atypical operation of the site should not result in an adverse noise impact. Based on the wording in the **NPPF**'s **PPG-N** (see **Table B.1** of **Appendix B**), it is considered that there should be **No Observed Adverse Effect**.

6.43 Accordingly, no specific measures are required necessarily, and it is considered that operating the site as proposed would be in keeping with national noise policy.

6.44 Notwithstanding this, Noise Management Controls are presented in **Section 7**, in order to assist with keeping operational sound levels to a practicable minimum.

UNCERTAINTY

6.45 In all assessments, it is good practice to consider uncertainty, which can arise from a number of different aspects of an assessment. There is a degree of uncertainty associated with: the instrumentation itself; the use of instrumentation; the source data; the sound propagation model, where applicable; and, of course, the subjective response of recipients.

6.46 In terms of the assessment presented above, uncertainty due to instrumentation error has kept to a minimum by the use of the highest standard of instrumentation and by ensuring that all instrumentation is calibrated before and after each measurement period and is within accepted calibration intervals.

6.47 In terms of the baseline data, the management of uncertainty has included carrying out the survey over a number of days, being mindful of the weather conditions, and clearly presenting and reviewing the data.

6.48 Regarding the acoustic modelling, great care has been taken in the model's construction, whilst avoiding simplified hand calculations. The sound level for the chiller plant has been based on a manufacturer sound power level for a representative item (avoiding the more favourable sound pressure data), whilst a worst case level has been assumed for the internal activities.

6.49 The sound insulation properties of the walls, roof and shutters have been considered separately, based on manufacturer data for commonly applied materials, whilst the assumed meteorological conditions are representative of moderately adverse conditions in terms of sound propagation.

6.50 Regarding subjective response, the guidance adopted for the assessment is based on the subjective response of the majority of the population, with care taken to consider relevant contextual factors.

6.51 On the basis of the above, therefore, whilst the magnitude of uncertainty cannot be quantitatively defined, it is considered that sufficient measures have been taken to minimise this to an acceptable degree.

7. NOISE MANAGEMENT CONTROLS

7.1 Notwithstanding this assessment, it is appropriate that sound emissions from potentially noisy activities are kept to a practicable minimum, if only for the benefit of the operatives and anyone around them. Accordingly, in addition to the considered layout of the development and siting of external plant, general noise control measures are given below.

1) Good communications with neighbouring residents to be established and maintained, ensuring that they know how to raise any issues that they may have and that these will be taken seriously.
2) Staff to be made aware of their responsibilities and the importance of keeping noise to a minimum.
3) Deliveries and collections shall not be via HGV and occur during normal working hours only.
4) Access road and areas of hardstanding to be kept in good repair.
5) Any metal components or glass should be handled with care; “placed” and not “dropped”.

8. CONCLUSIONS

8.1 The layout of the development has been considered with noise and the location of the receptors in mind, with activity directed to the east, south and west elevations, rather than the north elevation.

8.2 For the majority of the time, externally emitted sound from the proposed development will be limited to that from externally mounted chiller plant, but where placing this along the south elevation has been found to sufficiently limit sound levels in the vicinity of the receptors such that a noise impact should be avoided.

8.3 For around two weeks per year (in September/October) harvesting will take place, which is when the main processing will also occur (to sort, destem and press the grapes, etc. as necessary). At other times, likely limited to no more than a week per year, bottling will occur. During which occasions, elevated levels can be expected within the barn, but which will be largely, if not entirely, attenuated by the barn envelope. Indeed, a worst-case assessment has found that resultant levels in the vicinity of the properties should be well below the background conditions typically. They would also, therefore, be well below the ambient conditions, as well as relevant criteria for external amenity areas. Accordingly, the expectation is that there would be no adverse noise impact.

8.4 Further to which there would be the vehicle movements associated with typically no more than five members of staff, and occasionally deliveries and collections, but not via HGV. Given the isolated, brief and limited nature of such movements, therefore, no adverse noise impacts are expected in this regard.

8.5 Accordingly, beyond the placement of the chiller plant, no specific control measures are considered necessary, but where a neighbourly approach will be adopted, nonetheless, as per **Section 7**.

8.6 It is considered, therefore, that planning permission can be granted for the development as proposed, subject to appropriate noise-related planning conditions.

APPENDIX A: GLOSSARY

Sound can be measured by a sound level meter or other measuring system. Noise is related to a human response, and is routinely described as unwanted sound, or sound that is considered undesirable or disruptive.[2] Care has been taken in this document to use the most relevant of these terms (whereby 'sound' is used predominantly); however, in most reference documents, and, indeed, generally, 'sound' and 'noise' are used interchangeably. Consequently, just because the term 'noise' is used, doesn't necessarily mean a negative effect exits or will occur, and the context of the accompanying text should be taken into account.

Normal human hearing is able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble), and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain).

The ear does not respond equally to different frequencies of the same magnitude, but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify sound in a manner that approximates the response of the human ear, a weighting mechanism is used, which reduces the importance of lower and higher frequencies in a similar manner to human hearing.

The weighting mechanism that best corresponds to the response of the human ear (though not necessarily perfectly) is the 'A'-weighting scale. This is widely used for environmental sound measurement, and the levels are denoted as dBA, dB(A) or L_{Aeq}, L_{Amax} etc. according to the metric being measured or determined (see the Definitions below).

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10 dBA increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dBA is generally regarded as the minimum difference needed to perceive a change under normal listening conditions. Where other changes occur (associated with the change in sound level), such as additional vehicle movements on a road, which can be seen, then these may result in changes in sound level being more noticeable than they might otherwise be.

Further to such visual clues, and any other non-acoustical factors that affect people's response (such personal characteristics, and social, residential or environmental factors), the subjective response to a sound is dependent not only upon the sound pressure level and component frequencies, but also its intermittency. Consequently, various metrics have been developed to try and correlate people's attitudes to different sounds with the sound level and its fluctuations. The metrics used in this document, as per the relevant guidance, are defined below.

- Airborne sound: Sound that reaches the point of interest by propagation through air.
- Ambient sound: Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far.
- A-weighting, dB(A): The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.
- Background sound: Underlying level of sound over a period, T, which might in part be an indication of relative quietness at a given location.
- Calibration: The measurement system/ chain should be periodically calibrated, within a laboratory, against traceable calibration instrumentation, to either National Standards or as UKAS-Accredited, as required. The calibration of the system should also be checked in the field using a portable calibrator before and after each short term measurements, and periodically for longer term monitoring.
- Class 1: The Class of a sound level meter describes its accuracy as defined by the relevant international standards – Class 1 is more accurate than Class 2. The older standard **IEC 60651** referred to the grade as "Type", whereas the new standard **IEC 61672** refers to it as the "Class". The most accurate meters used in the field (as opposed to a laboratory) are Class 1. Class 2 meters can be used in some instances; however, Chris Wood Acoustics use Class 1 meters by default, as required by **BS 4142**, for example.

[2] Taken from the Foreword to BS 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound*.

- Context: The circumstances that form the setting for an event, statement, or idea, and in terms of which it can be fully understood. When considering context, pertinent factors include: the absolute level of sound; the character and level of the residual sound compared to the character and level of the specific sound; evidence on human response to the sound; and the sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.
- Decibel (dB): A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds (s1 and s2) is given by 20 log10 (s1/s2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20 µPa.
- Dwelling: A building used for living purposes. A mobile home used for permanent living should be included in an assessment. If calculations are being conducted for compensation purposes, then some mobile homes are dealt with under the Highways Noise Payments and Moveable Homes Regulations.
- Façade/ Façade Level: At a distance of 1 m in front of a large sound reflecting object such as a building façade. According to **BS 8233:2014**, "Façade level measurements of L_{pA} are typically 1 dB to 2 dB higher than corresponding free-field measurements because of the reflection from the façade." The Calculation of Road Traffic Noise (1988) uses 2.5 dB, whilst **BS 5228-1:2009+A1:2014** recommends 3 dB. Owing to the latter examples, together with other historical documents, it is more usual to apply 3 dB.
- Fast time-weighting (F): Averaging time used in sound level meters. Defined in BS EN 61672-2:2013 Electroacoustics. Sound level meters. Pattern evaluation tests.
- IOA: The Institute of Acoustics is the UK's professional body for those working in acoustics, noise and vibration. It was formed in 1974 from the amalgamation of the Acoustics Group of the Institute of Physics and the British Acoustical Society (a daughter society of the Institution of Mechanical Engineers). It is a nominated body of the Engineering Council, offering registration at Chartered and Incorporated Engineer levels.
- $L_{AF90,T}$: The A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time fast time-weighting (F). Generally used to describe the 'background' sound conditions.
- L_{AFmax}: The maximum A-weighted sound pressure level during a given time period. L_{max} is sometimes used for the assessment of occasional loud sounds, which may have little effect on the overall L_{eq} noise level, but could still affect the sound environment. Unless described otherwise, it is measured using the fast time-weighting (F).
- $L_{eq,T}$: A sound level index called the equivalent continuous sound level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded. Where the value is A-weighted, is will be presented '$L_{Aeq,T}$' or 'dBA $L_{eq,T}$', otherwise is should be an un-weighted (or linear) value.
- Point source: A sound source whose dimensions are small compared to the propagation distances involved. Due to the Inverse Square Law, the sound level pressure level decreases by 6 dB every time the distance between the measurement point and the source is doubled.
- Rating Level, $L_{Ar,Tr}$: The equivalent continuous A-weighted sound pressure level ($L_{Aeq,T}$, see also Specific Level) of the sound, plus any adjustment for the characteristic features of the sound.
- Residual Sound: ambient sound remaining at the assessment location when the specific sound source is suppressed (or absent) to such a degree that it does not contribute to the ambient sound.
- Sound power level, L_W: Sound power measured on a decibel scale, relative to a reference value of 10 12 W.
- Sound pressure level (sound level), L_p: The sound level is the sound pressure relative to a standard reference pressure of 20 µPa ($20x10^{-6}$ Pascals) on a decibel scale.
- Specific sound level, $L_s = L_{Aeq,Tr}$: Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, Tr.
- Specific sound source: Sound source being assessed.

APPENDIX B: NATIONAL NOISE POLICY

B.1 NATIONAL POLICY

The national policy of relevance comprises the Noise Policy Statement for England (NPSE, 2010) and the online National Planning Policy Framework (NPPF, regularly updated) and its associated planning practice guidance on "Noise" (also regularly updated). The guidance is necessarily generic and primarily geared towards local authorities preparing their own policies and associated guidance. The documents are described below.

B.1.1 Noise Policy Statement for England (NPSE, 2010)

The **NPSE** is the Government's overarching statement on noise policy for England, and applies to all forms of noise other than occupational noise, setting out the long-term vision of Government noise policy, which is to:

> "Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development."

Which is supported by the following noise policy aims:

> "Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:
>
> - Avoid significant adverse impacts on health and quality of life;
> - Mitigate and minimise adverse impacts on health and quality of life; and
> - Where possible, contribute to the improvement of health and quality of life."

When discussing the meaning of "significant adverse" and "adverse" within an "**Explanatory Note**", the **NPSE** states:

> "There are two established concepts from toxicology that are currently being applied to noise impacts for example, by the World Health Organisation. They are
>
> "NOEL – No Observed Effect Level - This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.
>
> "LOAEL – Lowest Observed Adverse Effect Level - This is the level above which adverse effects on health and quality of life can be detected."

To which the **NPSE** added the following related concept:

> "SOAEL – Significant Observed Adverse Effect Level - This is the level above which significant adverse effects on health and quality of life occur."

The **Explanatory Note** continues:

> "It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available."

The **NPSE** concludes by explaining in a little more detail how the LOAEL and SOAEL relate to the three aims listed above. Logically, it starts with the aim of avoiding significant adverse effects on health and quality of life, then addresses the situation where the noise impact falls between the LOAEL and the SOAEL, when "all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development." The final aim envisages proactive management of noise to improve health and quality of life, again taking into account the guiding principles of sustainable development.

B.1.2 National Planning Policy Framework (NPPF, 2021)

First published in 2012, and most recently updated in July 2021, the **NPPF** sets out the Government's planning policies for England, and how these are expected to be applied. Noise is referenced within the **NPPF** as follows. These are effectively the **NPPF**'s policies on noise.

> "174. Planning policies and decisions should contribute to and enhance the natural and local environments by:
>
> "…e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans…"

> "185. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:
>
> "a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life[60]…"

Reference number 60 of the above quotation points to the **Explanatory Note** to the **NPSE** (see above).

The following policy is also relevant to noise.

> "187. Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."

As mentioned above, the Government has published accompanying web-based planning guidance for a number of categories, including noise (see below).

B.1.3 NPPF Planning Practice Guidance, Noise (PPG-N, 2019)

Following initial release in 2014, the **planning practice guidance** now forms part of the **NPPF**, referred to as "relevant planning practice guidance", which includes guidance on the category of "Noise". The guidance is often referred to as **PPG-Noise**, **PPG-N** or **PPG(N)**.

In keeping with the **NPSE** and **NPPF**, no values (in dB) are presented; however, plenty of guidance is provided as to the issues to consider in assessing noise and determining suitable thresholds. Whilst, in keeping with this report, reference is made to **BS 8233**.

A "noise exposure hierarchy table" is provided, which summarises the noise exposure hierarchy based on the likely average response of those affected, and is reproduced below. It includes "examples of outcomes" relevant to the NOEL, LOAEL and SOAEL effect thresholds described in the **NPSE**. These outcomes are in descriptive form; there is no numerical definition of the NOEL, LOAEL and SOAEL.

Table B.1: Noise exposure hierarchy table (as per PPG-N)

Response	Examples of outcomes	Increasing effect level	Action
No Observed Effect Level			
Not present	No effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

It is left to other guidance documents (e.g. BS 4142 and BS 8233) and professional opinion to determine thresholds where required.

APPENDIX C: LETTER FROM VINESCAPES

Vinescapes Limited
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www.vinescapes.com
+44 (0) 1306 733960

11th March 2024

Re: Gold Street Winery: Operational Expectations

Dear Pallab,

Please find below details regarding what we would reasonably expect to be 'typical operations' for a winery of the scale you propose and the wine you plan to make, over a typical wine production year.

Personal statement

I (Dr Alistair Nesbitt) am CEO of Vinescapes Ltd., a consultancy that supports the technical and strategic development of wine production businesses. Vinescapes consults to new and existing vineyards, wine producers, policy actors, and the global wine industry. I hold a PhD in Viticulture and Climate Science, an MSc in Wine Bioscience and a BSc in Viticulture & Oenology and draw on 20-years' experience to help wine production businesses establish and operate sustainably.

1. Scale

Once fully established we would expect the 8.8ha of vineyard area to yield circa 50,000btls of wine. This will vary from year to year due to vintage / seasonal weather variation and your desired grape and wine quality targets.

To accommodate the grapes transformation into high-quality still and sparkling wine a building with a floor area of circa 750m^2 will be required. Within this space grapes will be sorted, some will be destemmed, pressed, pumped into stainless steel tanks, fermented, possibly moved into barrels or other vessels, racked, fined, filtered, blended, bottled, aged (sparkling wine often for >3-years), labelled and packaged. Sparkling wine will also be riddled, disgorged, and corked. To undertake the work safely and have space for the various operations the scale of proposed building is appropriate.

2. Vineyard and winery lifecycle

Here I set out the core elements of the vineyard and winery cycle. This is not an exhaustive list as farming and winemaking activities are sometimes pro- or reactive to seasonal conditions. In summary: during December – March the vines are pruned, canes pulled out and those left tied down for the years production. Over winter any trellis repairs are made, wires are dropped, and the vineyard is prepared for the growing season. This starts in April as ground and air temperatures increase, sap rises and new shoots, leaves and flowers start to emerge. By early summer bunches are forming on the vines and the regular tasks of scouting the vineyard for any issues, managing pests or diseases, increasing biodiversity, managing the inter-row and under vine areas takes place. The specific practices used to achieve the above are dependent on the season and management decisions. Come autumn the grapes are regularly monitored for ripeness and when the optimum levels are reached the grapes are harvested and taken to the winery for processing. Harvesting is usually by hand into small baskets that are placed on a trailer and towed to the winery. At Gold Street some of the harvested grapes may just be walked to the winery. The vines are then left until they go dormant and the cycle starts again.

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Once the grapes arrive at the winery they are sorted by hand to remove any bad grapes, leaves or dirt, and placed into a press for juice extraction. The juice is then pumped into tanks or barrels to be fermented and the range of processes listed in Section 1 are then enacted over the course of a few months to several years depending on the styles of wine being made from that year's harvest. During this time the winemaker and cellar staff will are and tend to the wines to help them evolve into their full potential.

3. Winery staffing expectations.

Once at full production capacity (by 2027) we estimate the winemaking process will require 2 full-time staff (winemaker and assistant winemaker) and a seasonal cellar hand to support during harvest or other peak times like bottling. These are usually winemaking students or aspiring winemakers.

4. Winery operational hours

For most of the year we would expect the winery to be operational during normal daytime working hours. During harvest (likely a 1-2-week period during September – October) this may alter and / or increase to longer days, maybe 12-hours-long depending on the winemaker's decision regarding process optimisation.

5. Winery vehicle movements

During the course of the year a winey of this scale would expect staff on a daily basis plus the post person. Within a week the winery may have one or more deliveries from couriers or suppliers but it's impossible to say exactly how many. At harvest there would be additional vehicles for the winery cellar hands. These estimations do not include any commercial element related to the winery.

Summary

Given the small scale of production the proposed winery at Gold Street would be relatively boutique in scale and from experience of similar wineries I believe it could be managed with limited disturbance to surrounding properties or neighbours in terms of vehicle movements or noise. From the proposals I've seen this is a complementary (to a fruit growing area) enterprise that for the purpose of fruit / grape processing is at a fit-for-purpose scale.

Further information on UK wine production and viticulture impacts in the UK, across the environment and economy can be found via:

- Wines of Great Britain: https://www.winegb.co.uk/news/
- The South Downs National Park Authority Viticulture Impact Assessment: https://www.southdowns.gov.uk/wp-content/uploads/2021/04/South-Downs-Viticulture-Growth-Impact-Assessment.pdf

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Yours sincerely,

Dr Alistair Nesbitt
CEO Vinescapes Ltd.

APPENDIX D: SURVEY RESULTS

Date and Time (start)	Position 1			Position 2		
	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB
04/03/2024 11:30	75	53	38			
04/03/2024 11:45	68	48	38	81	60	39
04/03/2024 12:00	72	49	40	78	56	41
04/03/2024 12:15	65	49	41	80	57	41
04/03/2024 12:30	61	48	39	74	55	42
04/03/2024 12:45	59	47	41	75	55	42
04/03/2024 13:00	67	49	42	73	55	42
04/03/2024 13:15	61	50	43	67	54	46
04/03/2024 13:30	65	51	45	69	53	44
04/03/2024 13:45	63	49	43	79	56	41
04/03/2024 14:00	71	52	46	66	54	48
04/03/2024 14:15	66	49	44	67	52	44
04/03/2024 14:30	64	48	42	77	54	42
04/03/2024 14:45	61	49	43	64	50	42
04/03/2024 15:00	67	48	42	68	53	41
04/03/2024 15:15	75	48	42	68	52	42
04/03/2024 15:30	66	48	42	69	52	42
04/03/2024 15:45	66	46	40	70	53	39
04/03/2024 16:00	68	48	40	74	54	38
04/03/2024 16:15	68	49	42	70	53	41
04/03/2024 16:30	72	48	41	75	57	40
04/03/2024 16:45	80	51	41	74	52	39
04/03/2024 17:00	66	44	39	69	54	39
04/03/2024 17:15	59	43	38	72	55	37
04/03/2024 17:30	62	43	38	68	51	38
04/03/2024 17:45	62	44	37	78	58	38
04/03/2024 18:00	59	42	37	79	56	37
04/03/2024 18:15	68	48	35	69	50	35
04/03/2024 18:30	58	45	38	69	50	37
04/03/2024 18:45	63	47	40	68	50	39
04/03/2024 19:00	55	45	41	68	50	40
04/03/2024 19:15	71	50	41	72	52	42
04/03/2024 19:30	63	49	42	67	52	39
04/03/2024 19:45	60	45	39	69	52	41
04/03/2024 20:00	62	44	37	65	48	37
04/03/2024 20:15	66	47	35	66	49	35
04/03/2024 20:30	57	45	39	67	50	40
04/03/2024 20:45	63	45	34	64	48	36
04/03/2024 21:00	65	48	38	67	50	38
04/03/2024 21:15	65	48	35	68	51	36
04/03/2024 21:30	58	45	38	71	51	38

Date and Time (start)	Position 1			Position 2		
	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB
04/03/2024 21:45	62	47	37	71	52	40
04/03/2024 22:00	60	46	38	64	50	39
04/03/2024 22:15	58	49	41	72	53	44
04/03/2024 22:30	64	53	46	66	55	47
04/03/2024 22:45	60	50	43	70	55	47
04/03/2024 23:00	57	47	39	60	48	40
04/03/2024 23:15	57	46	37	71	48	36
04/03/2024 23:30	52	41	35	67	47	36
04/03/2024 23:45	56	42	34	52	40	34
05/03/2024 00:00	49	38	31	54	41	31
05/03/2024 00:15	51	40	33	53	41	34
05/03/2024 00:30	47	39	32	50	39	32
05/03/2024 00:45	42	32	26	44	34	26
05/03/2024 01:00	39	29	25	37	29	26
05/03/2024 01:15	41	33	27	44	33	28
05/03/2024 01:30	41	32	26	41	31	27
05/03/2024 01:45	41	32	27	38	32	27
05/03/2024 02:00	49	33	28	47	33	29
05/03/2024 02:15	55	37	30	54	38	32
05/03/2024 02:30	53	36	27	65	43	31
05/03/2024 02:45	47	30	25	55	35	28
05/03/2024 03:00	41	31	26	58	33	26
05/03/2024 03:15	52	31	24	58	34	26
05/03/2024 03:30	44	29	25	60	37	28
05/03/2024 03:45	49	34	28	59	39	32
05/03/2024 04:00	46	31	26	59	37	29
05/03/2024 04:15	49	35	30	59	39	34
05/03/2024 04:30	46	30	26	63	36	28
05/03/2024 04:45	53	33	26	53	35	28
05/03/2024 05:00	50	31	26	67	42	27
05/03/2024 05:15	48	33	26	72	47	26
05/03/2024 05:30	53	35	27	70	44	27
05/03/2024 05:45	52	36	26	67	43	26
05/03/2024 06:00	60	43	34	74	60	31
05/03/2024 06:15	66	47	38	74	59	39
05/03/2024 06:30	73	51	41	71	56	38
05/03/2024 06:45	69	52	44	80	58	40
05/03/2024 07:00	72	53	41	84	60	37
05/03/2024 07:15	67	50	41	75	59	38
05/03/2024 07:30	66	50	41	81	59	39
05/03/2024 07:45	73	52	38	74	56	35

Date and Time (start)	Position 1			Position 2		
	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB
05/03/2024 08:00	69	50	39	73	56	36
05/03/2024 08:15	77	54	42	82	60	53
05/03/2024 08:30	62	47	41	79	59	52
05/03/2024 08:45	71	49	40	70	56	52
05/03/2024 09:00	70	51	42	80	57	52
05/03/2024 09:15	69	49	40	81	57	49
05/03/2024 09:30	65	49	40	81	60	49
05/03/2024 09:45	59	46	40	72	58	40
05/03/2024 10:00	76	51	42	70	54	38
05/03/2024 10:15	69	50	42	71	53	37
05/03/2024 10:30	83	55	41	77	54	37
05/03/2024 10:45	66	50	42	78	55	38
05/03/2024 11:00	69	54	45	73	52	37
05/03/2024 11:15	68	52	43	68	54	36
05/03/2024 11:30	67	53	47	76	55	38
05/03/2024 11:45	69	50	40	70	52	35
05/03/2024 12:00	76	51	39	71	56	35
05/03/2024 12:15	80	52	40	73	55	37
05/03/2024 12:30	80	58	39	83	60	37
05/03/2024 12:45	75	53	41	76	56	38
05/03/2024 13:00	71	49	39	80	55	37
05/03/2024 13:15	70	49	40	67	52	37
05/03/2024 13:30	78	51	40	75	55	51
05/03/2024 13:45	66	44	39	73	57	52
05/03/2024 14:00	63	46	39	75	56	47
05/03/2024 14:15	66	45	40	78	55	47
05/03/2024 14:30	80	54	41	73	56	47
05/03/2024 14:45	68	46	41	82	59	48
05/03/2024 15:00	70	50	41	82	56	48
05/03/2024 15:15	70	46	41	70	54	48
05/03/2024 15:30	71	47	39	70	56	38
05/03/2024 15:45	66	46	38	71	50	37
05/03/2024 16:00	73	52	38	71	55	40
05/03/2024 16:15	79	51	39	73	55	38
05/03/2024 16:30	68	49	43	83	55	45
05/03/2024 16:45	75	51	46	73	56	44
05/03/2024 17:00	65	50	46	72	55	43
05/03/2024 17:15	70	53	47	80	60	42
05/03/2024 17:30	65	47	41	73	57	40
05/03/2024 17:45	61	44	40	71	55	39
05/03/2024 18:00	64	47	41	81	59	40

Date and Time (start)	Position 1			Position 2		
	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB
05/03/2024 18:15	51	42	39	69	50	39
05/03/2024 18:30	53	42	40	70	51	39
05/03/2024 18:45	51	42	40	68	51	39
05/03/2024 19:00	57	43	40	73	53	39
05/03/2024 19:15	48	40	38	65	43	37
05/03/2024 19:30	54	42	37	70	52	37
05/03/2024 19:45	53	40	37	69	51	37
05/03/2024 20:00	53	40	36	64	45	36
05/03/2024 20:15	45	37	35	67	45	35
05/03/2024 20:30	47	39	36	68	49	35
05/03/2024 20:45	54	42	38	71	47	37
05/03/2024 21:00	50	40	37	62	42	36
05/03/2024 21:15	53	41	37	73	50	37
05/03/2024 21:30	51	39	35	73	50	35
05/03/2024 21:45	52	40	36	66	46	36
05/03/2024 22:00	52	39	37	67	47	37
05/03/2024 22:15	53	39	36	65	45	36
05/03/2024 22:30	52	36	33	51	35	34
05/03/2024 22:45	45	35	32	45	35	32
05/03/2024 23:00	49	37	33	65	43	33
05/03/2024 23:15	44	35	32	43	34	32
05/03/2024 23:30	49	37	33	64	42	33
05/03/2024 23:45	43	34	30	41	33	30
06/03/2024 00:00	57	38	29	86	63	30
06/03/2024 00:15	47	34	31	44	33	31
06/03/2024 00:30	60	37	30	59	37	30
06/03/2024 00:45	45	33	31	45	32	30
06/03/2024 01:00	54	36	30	51	36	31
06/03/2024 01:15	44	35	32	43	35	33
06/03/2024 01:30	49	37	33	49	38	34
06/03/2024 01:45	46	37	33	44	37	34
06/03/2024 02:00	43	35	33	46	36	33
06/03/2024 02:15	45	35	31	48	35	31
06/03/2024 02:30	55	37	34	51	37	34
06/03/2024 02:45	42	36	34	46	37	34
06/03/2024 03:00	43	35	31	44	36	32
06/03/2024 03:15	53	37	31	54	37	33
06/03/2024 03:30	54	37	30	55	38	31
06/03/2024 03:45	50	34	28	67	42	30
06/03/2024 04:00	45	31	29	44	33	31
06/03/2024 04:15	51	36	30	52	37	32

Date and Time (start)	Position 1			Position 2		
	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB
06/03/2024 04:30	46	33	29	47	34	30
06/03/2024 04:45	55	36	28	57	36	29
06/03/2024 05:00	56	40	31	70	45	32
06/03/2024 05:15	55	39	34	73	48	33
06/03/2024 05:30	56	41	35	68	46	34
06/03/2024 05:45	55	43	37	73	56	36
06/03/2024 06:00	71	50	40	75	61	39
06/03/2024 06:15	81	54	40	80	62	38
06/03/2024 06:30	70	52	41	77	60	38
06/03/2024 06:45	61	47	42	76	59	39
06/03/2024 07:00	61	46	41	74	58	37
06/03/2024 07:15	71	47	41	77	57	38
06/03/2024 07:30	65	46	40	79	58	38
06/03/2024 07:45	67	45	39	81	58	37
06/03/2024 08:00	66	49	40	74	57	36
06/03/2024 08:15	69	52	47	71	55	36
06/03/2024 08:30	71	54	50	70	53	38
06/03/2024 08:45	73	50	41	80	57	38
06/03/2024 09:00	65	46	38	74	57	36
06/03/2024 09:15	64	46	36	72	52	34
06/03/2024 09:30	63	45	38	71	55	36
06/03/2024 09:45	68	51	37	79	60	35
06/03/2024 10:00	64	46	37	76	57	35
06/03/2024 10:15	74	50	36	67	50	32
06/03/2024 10:30	66	52	37	75	55	33
06/03/2024 10:45	68	55	46	77	58	38
06/03/2024 11:00	65	53	47	77	52	38
06/03/2024 11:15	63	49	35	76	55	36
06/03/2024 11:30	76	51	38	77	56	36
06/03/2024 11:45	68	48	34	78	53	33
06/03/2024 12:00	65	42	30	71	54	31
06/03/2024 12:15	67	44	31	71	52	31
06/03/2024 12:30	64	41	31	73	57	31
06/03/2024 12:45	80	53	33	72	52	35
06/03/2024 13:00	69	46	33	76	55	34
06/03/2024 13:15	76	53	35	71	56	35
06/03/2024 13:30	72	61	41	75	56	41
06/03/2024 13:45	74	61	55	74	54	42
06/03/2024 14:00	73	49	34	78	56	34
06/03/2024 14:15	66	49	42	72	55	40
06/03/2024 14:30	69	48	34	73	55	34

Date and Time (start)	Position 1			Position 2		
	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB
06/03/2024 14:45	68	48	34	73	50	34
06/03/2024 15:00	75	49	36	65	52	37
06/03/2024 15:15	81	54	37	66	51	37
06/03/2024 15:30	75	47	35	79	54	34
06/03/2024 15:45	76	52	37	78	56	36
06/03/2024 16:00	64	47	37	70	53	37
06/03/2024 16:15	81	54	34	73	55	34
06/03/2024 16:30	62	42	34	77	54	32
06/03/2024 16:45	60	41	34	71	53	34
06/03/2024 17:00	66	45	36	73	56	35
06/03/2024 17:15	67	46	37	72	56	37
06/03/2024 17:30	63	42	37	72	55	36
06/03/2024 17:45	65	44	38	76	57	39
06/03/2024 18:00	68	46	37	76	58	37
06/03/2024 18:15	59	42	36	76	55	36
06/03/2024 18:30	47	38	34	67	47	33
06/03/2024 18:45	55	40	32	73	50	31
06/03/2024 19:00	52	39	31	68	47	31
06/03/2024 19:15	48	36	31	71	49	30
06/03/2024 19:30	50	40	31	73	52	31
06/03/2024 19:45	64	43	32	70	50	31
06/03/2024 20:00	50	39	32	66	46	32
06/03/2024 20:15	48	39	34	62	43	34
06/03/2024 20:30	48	38	34	52	38	33
06/03/2024 20:45	58	43	32	63	45	32
06/03/2024 21:00	64	42	33	69	47	33
06/03/2024 21:15	51	38	31	63	44	32
06/03/2024 21:30	51	39	29	71	49	30
06/03/2024 21:45	51	38	29	72	47	29
06/03/2024 22:00	50	36	28	66	46	28
06/03/2024 22:15	76	55	29	77	56	28
06/03/2024 22:30	49	34	28	45	33	27
06/03/2024 22:45	54	34	26	67	43	26
06/03/2024 23:00	48	36	23	64	41	24
06/03/2024 23:15	46	27	21	63	40	21
06/03/2024 23:30	46	31	20	70	45	21
06/03/2024 23:45	50	27	19	67	41	20
07/03/2024 00:00	44	23	19	42	23	20
07/03/2024 00:15	32	22	19	44	26	21
07/03/2024 00:30	44	25	20	63	39	23
07/03/2024 00:45	44	22	19	50	28	23

Date and Time (start)	Position 1			Position 2		
	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB
07/03/2024 01:00	50	27	21	66	42	23
07/03/2024 01:15	42	27	23	47	28	24
07/03/2024 01:30	42	28	26	46	28	26
07/03/2024 01:45	41	28	24	46	28	25
07/03/2024 02:00	43	30	27	44	29	27
07/03/2024 02:15	41	31	28	63	39	28
07/03/2024 02:30	39	31	29	44	31	29
07/03/2024 02:45	45	31	28	38	31	29
07/03/2024 03:00	47	32	28	46	32	28
07/03/2024 03:15	43	31	27	42	31	27
07/03/2024 03:30	42	32	29	43	33	30
07/03/2024 03:45	43	33	30	39	33	30
07/03/2024 04:00	44	34	32	43	35	32
07/03/2024 04:15	41	36	33	40	35	33
07/03/2024 04:30	43	39	36	43	38	36
07/03/2024 04:45	50	40	38	72	48	37
07/03/2024 05:00	49	39	38	49	39	37
07/03/2024 05:15	57	41	38	53	40	37
07/03/2024 05:30	56	42	38	69	46	38
07/03/2024 05:45	56	44	39	73	58	39
07/03/2024 06:00	77	51	38	75	60	37
07/03/2024 06:15	78	54	39	79	61	38
07/03/2024 06:30	65	45	39	74	55	39
07/03/2024 06:45	71	50	40	75	57	40
07/03/2024 07:00	75	51	42	82	60	41
07/03/2024 07:15	73	52	43	73	59	47
07/03/2024 07:30	75	54	46	75	57	47
07/03/2024 07:45	74	54	44	86	57	44
07/03/2024 08:00	62	53	50	75	55	42
07/03/2024 08:15	64	50	45	73	53	40
07/03/2024 08:30	68	49	43	102	73	40
07/03/2024 08:45	69	54	47	72	56	41
07/03/2024 09:00	78	57	45	72	56	42
07/03/2024 09:15	65	49	44	78	57	42
07/03/2024 09:30	71	49	41	76	56	41
07/03/2024 09:45	67	48	40	80	59	41
07/03/2024 10:00	82	51	40	69	52	40
07/03/2024 10:15	73	49	39	73	51	39
07/03/2024 10:30						
07/03/2024 10:45						
07/03/2024 11:00	86	58	41			

Date and Time (start)	Position 1			Position 2		
	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB
07/03/2024 11:15	58	46	41			
07/03/2024 11:30	63	47	40			
07/03/2024 11:45	64	45	40			
07/03/2024 12:00	61	47	39			
07/03/2024 12:15	66	47	41			
07/03/2024 12:30	69	49	41			
07/03/2024 12:45	71	49	41			
07/03/2024 13:00	64	46	39			
07/03/2024 13:15	66	46	39			
07/03/2024 13:30	65	44	39			
07/03/2024 13:45	70	47	38			
07/03/2024 14:00	67	51	41			
07/03/2024 14:15	65	49	43			
07/03/2024 14:30	79	51	43			
07/03/2024 14:45	70	51	43			
07/03/2024 15:00	64	49	42			
07/03/2024 15:15	67	48	42			
07/03/2024 15:30	64	44	41			
07/03/2024 15:45	78	49	41			
07/03/2024 16:00	85	56	42			
07/03/2024 16:15	67	49	42			
07/03/2024 16:30	68	48	42			
07/03/2024 16:45	63	46	42			
07/03/2024 17:00	67	48	42			
07/03/2024 17:15	76	49	42			
07/03/2024 17:30	76	49	42			
07/03/2024 17:45	67	47	42			
07/03/2024 18:00	62	46	42			
07/03/2024 18:15	56	44	41			
07/03/2024 18:30	64	44	41			
07/03/2024 18:45	66	49	41			
07/03/2024 19:00	58	44	41			
07/03/2024 19:15	58	43	40			
07/03/2024 19:30	60	44	40			
07/03/2024 19:45	61	44	39			
07/03/2024 20:00	51	41	39			
07/03/2024 20:15	65	47	40			
07/03/2024 20:30	58	44	40			
07/03/2024 20:45	58	44	39			
07/03/2024 21:00	63	46	40			
07/03/2024 21:15	62	47	39			

Date and Time (start)	Position 1			Position 2		
	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB
07/03/2024 21:30	65	46	39			
07/03/2024 21:45	58	43	37			
07/03/2024 22:00	56	42	37			
07/03/2024 22:15	54	40	36			
07/03/2024 22:30	45	37	36			
07/03/2024 22:45	49	39	33			
07/03/2024 23:00	52	39	35			
07/03/2024 23:15	53	38	34			
07/03/2024 23:30	52	36	34			
07/03/2024 23:45	48	36	33			
08/03/2024 00:00	52	35	33			
08/03/2024 00:15	52	36	34			
08/03/2024 00:30	50	37	33			
08/03/2024 00:45	39	34	32			
08/03/2024 01:00	37	33	31			
08/03/2024 01:15	49	35	31			
08/03/2024 01:30	47	34	30			
08/03/2024 01:45	50	33	29			
08/03/2024 02:00	47	31	29			
08/03/2024 02:15	55	32	29			
08/03/2024 02:30	39	32	30			
08/03/2024 02:45	46	33	29			
08/03/2024 03:00	50	35	31			
08/03/2024 03:15	41	34	32			
08/03/2024 03:30	49	35	32			
08/03/2024 03:45	48	34	31			
08/03/2024 04:00	43	35	33			
08/03/2024 04:15	44	36	35			
08/03/2024 04:30	43	37	36			
08/03/2024 04:45	44	38	37			
08/03/2024 05:00	47	40	38			
08/03/2024 05:15	74	48	40			
08/03/2024 05:30	50	43	41			
08/03/2024 05:45	65	48	42			
08/03/2024 06:00	78	55	44			
08/03/2024 06:15	73	55	47			
08/03/2024 06:30	61	49	44			
08/03/2024 06:45	69	50	44			
08/03/2024 07:00	72	49	44			
08/03/2024 07:15	73	53	44			
08/03/2024 07:30	67	51	43			

Date and Time (start)	Position 1			Position 2		
	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB
08/03/2024 07:45	67	46	42			
08/03/2024 08:00	68	50	41			
08/03/2024 08:15	74	54	41			
08/03/2024 08:30	73	49	40			
08/03/2024 08:45	68	45	39			
08/03/2024 09:00	65	45	39			
08/03/2024 09:15	69	48	38			
08/03/2024 09:30	68	47	39			
08/03/2024 09:45	70	48	39			
08/03/2024 10:00	66	46	39			
08/03/2024 10:15	65	47	39			
08/03/2024 10:30	71	49	39			
08/03/2024 10:45	76	51	40			
08/03/2024 11:00	72	48	41			
08/03/2024 11:15	71	51	41			
08/03/2024 11:30	68	50	43			
08/03/2024 11:45	76	52	43			
08/03/2024 12:00	62	46	41			
08/03/2024 12:15	65	52	42			
08/03/2024 12:30	78	59	54			
08/03/2024 12:45	62	46	40			
08/03/2024 13:00	70	54	40			
08/03/2024 13:15	75	50	42			
08/03/2024 13:30	80	51	41			
08/03/2024 13:45	60	50	42			
08/03/2024 14:00	67	48	41			
08/03/2024 14:15	71	47	42			
08/03/2024 14:30	83	58	46			
08/03/2024 14:45	82	56	45			
08/03/2024 15:00	78	51	44			
08/03/2024 15:15	70	52	47			
08/03/2024 15:30	65	51	47			
08/03/2024 15:45	70	48	42			
08/03/2024 16:00	70	51	42			
08/03/2024 16:15	73	54	47			
08/03/2024 16:30	67	50	43			
08/03/2024 16:45	77	53	43			
08/03/2024 17:00	76	53	43			
08/03/2024 17:15	62	45	42			
08/03/2024 17:30	63	47	43			
08/03/2024 17:45	60	46	43			

Date and Time (start)	Position 1			Position 2		
	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB
08/03/2024 18:00	72	46	42			
08/03/2024 18:15	62	46	42			
08/03/2024 18:30	54	45	42			
08/03/2024 18:45	54	44	41			
08/03/2024 19:00	65	49	41			
08/03/2024 19:15	62	46	41			
08/03/2024 19:30	60	45	40			
08/03/2024 19:45	58	43	40			
08/03/2024 20:00	56	42	39			
08/03/2024 20:15	59	43	39			
08/03/2024 20:30	61	45	38			
08/03/2024 20:45	57	42	38			
08/03/2024 21:00	60	45	37			
08/03/2024 21:15	57	42	37			
08/03/2024 21:30	55	41	36			
08/03/2024 21:45	64	48	37			
08/03/2024 22:00	53	41	36			
08/03/2024 22:15	59	42	36			
08/03/2024 22:30	55	40	35			
08/03/2024 22:45	45	37	35			
08/03/2024 23:00	45	36	34			
08/03/2024 23:15	44	36	34			
08/03/2024 23:30	53	37	33			
08/03/2024 23:45	45	33	31			
09/03/2024 00:00	63	33	31			
09/03/2024 00:15	46	34	31			
09/03/2024 00:30	42	32	30			
09/03/2024 00:45	44	32	28			
09/03/2024 01:00	43	30	29			
09/03/2024 01:15	53	36	29			
09/03/2024 01:30	38	29	28			
09/03/2024 01:45	44	31	28			
09/03/2024 02:00	53	30	27			
09/03/2024 02:15	41	28	27			
09/03/2024 02:30	39	28	27			
09/03/2024 02:45	40	30	28			
09/03/2024 03:00	53	34	29			
09/03/2024 03:15	58	38	31			
09/03/2024 03:30	46	35	28			
09/03/2024 03:45	46	32	27			
09/03/2024 04:00	52	37	29			

Date and Time (start)	Position 1			Position 2		
	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB
09/03/2024 04:15	51	34	28			
09/03/2024 04:30	41	33	28			
09/03/2024 04:45	53	42	32			
09/03/2024 05:00	49	42	36			
09/03/2024 05:15	53	41	35			
09/03/2024 05:30	64	42	34			
09/03/2024 05:45	62	46	35			
09/03/2024 06:00	78	53	37			
09/03/2024 06:15	73	52	37			
09/03/2024 06:30	67	47	37			
09/03/2024 06:45	64	46	36			
09/03/2024 07:00	65	47	38			
09/03/2024 07:15	63	45	36			
09/03/2024 07:30	70	51	37			
09/03/2024 07:45	64	46	38			
09/03/2024 08:00	61	44	38			
09/03/2024 08:15	69	46	38			
09/03/2024 08:30	62	48	39			
09/03/2024 08:45	68	46	37			
09/03/2024 09:00	58	43	36			
09/03/2024 09:15	72	52	40			
09/03/2024 09:30	75	52	38			
09/03/2024 09:45	73	53	37			
09/03/2024 10:00	62	48	37			
09/03/2024 10:15	64	47	38			
09/03/2024 10:30	62	48	43			
09/03/2024 10:45	60	45	38			
09/03/2024 11:00	75	51	38			
09/03/2024 11:15	73	50	39			
09/03/2024 11:30	62	44	39			
09/03/2024 11:45	72	51	42			
09/03/2024 12:00	70	50	41			
09/03/2024 12:15	64	47	41			
09/03/2024 12:30	76	53	40			
09/03/2024 12:45	73	51	40			
09/03/2024 13:00	59	46	40			
09/03/2024 13:15	82	54	39			
09/03/2024 13:30	66	47	40			
09/03/2024 13:45	80	54	39			
09/03/2024 14:00	67	48	39			
09/03/2024 14:15	83	56	38			

Date and Time (start)	Position 1			Position 2		
	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB
09/03/2024 14:30	83	56	40			
09/03/2024 14:45	65	46	39			
09/03/2024 15:00	74	49	39			
09/03/2024 15:15	67	47	39			
09/03/2024 15:30	81	53	38			
09/03/2024 15:45	72	46	38			
09/03/2024 16:00	71	45	38			
09/03/2024 16:15	78	51	39			
09/03/2024 16:30	64	46	38			
09/03/2024 16:45	74	47	39			
09/03/2024 17:00	71	50	39			
09/03/2024 17:15	59	44	39			
09/03/2024 17:30	64	46	38			
09/03/2024 17:45	68	48	39			
09/03/2024 18:00	63	47	39			
09/03/2024 18:15	62	46	39			
09/03/2024 18:30	58	46	38			
09/03/2024 18:45	59	44	39			
09/03/2024 19:00	57	44	39			
09/03/2024 19:15	60	44	38			
09/03/2024 19:30	61	44	37			
09/03/2024 19:45	51	38	34			
09/03/2024 20:00	53	38	34			
09/03/2024 20:15	65	45	34			
09/03/2024 20:30	60	43	32			
09/03/2024 20:45	57	41	30			
09/03/2024 21:00	55	39	29			
09/03/2024 21:15	51	36	29			
09/03/2024 21:30	56	40	28			
09/03/2024 21:45	54	39	30			
09/03/2024 22:00	56	40	30			
09/03/2024 22:15	53	38	30			
09/03/2024 22:30	51	35	31			
09/03/2024 22:45	46	36	31			
09/03/2024 23:00	53	36	30			
09/03/2024 23:15	52	34	29			
09/03/2024 23:30	53	35	30			
09/03/2024 23:45	50	35	30			
10/03/2024 00:00	45	33	29			
10/03/2024 00:15	46	32	29			
10/03/2024 00:30	42	31	28			

Date and Time (start)	Position 1			Position 2		
	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB
10/03/2024 00:45	39	29	27			
10/03/2024 01:00	42	30	26			
10/03/2024 01:15	44	33	26			
10/03/2024 01:30	45	34	26			
10/03/2024 01:45	38	29	23			
10/03/2024 02:00	40	29	25			
10/03/2024 02:15	46	33	25			
10/03/2024 02:30	50	39	33			
10/03/2024 02:45	50	40	30			
10/03/2024 03:00	45	34	26			
10/03/2024 03:15	48	34	24			
10/03/2024 03:30	44	26	22			
10/03/2024 03:45	53	34	22			
10/03/2024 04:00	38	23	20			
10/03/2024 04:15	48	29	21			
10/03/2024 04:30	60	34	24			
10/03/2024 04:45	44	32	27			
10/03/2024 05:00	57	39	31			
10/03/2024 05:15	50	34	31			
10/03/2024 05:30	63	43	31			
10/03/2024 05:45	58	44	36			
10/03/2024 06:00	77	52	36			
10/03/2024 06:15	64	44	35			
10/03/2024 06:30	62	50	39			
10/03/2024 06:45	67	54	49			
10/03/2024 07:00	68	56	50			
10/03/2024 07:15	71	57	49			
10/03/2024 07:30	93	59	37			
10/03/2024 07:45	68	49	35			
10/03/2024 08:00	73	50	39			
10/03/2024 08:15	61	47	38			
10/03/2024 08:30	70	53	43			
10/03/2024 08:45	65	49	42			
10/03/2024 09:00	78	52	45			
10/03/2024 09:15	69	58	49			
10/03/2024 09:30	90	62	54			
10/03/2024 09:45	68	60	57			
10/03/2024 10:00	68	58	49			
10/03/2024 10:15	71	56	52			
10/03/2024 10:30	70	57	53			
10/03/2024 10:45	67	59	56			

Date and Time (start)	Position 1			Position 2		
	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB
10/03/2024 11:00	77	57	53			
10/03/2024 11:15	72	56	47			
10/03/2024 11:30	68	57	48			
10/03/2024 11:45	70	58	54			
10/03/2024 12:00	70	58	51			
10/03/2024 12:15	66	54	44			
10/03/2024 12:30	69	48	41			
10/03/2024 12:45	62	47	40			
10/03/2024 13:00	73	48	40			
10/03/2024 13:15	69	52	39			
10/03/2024 13:30	69	46	40			
10/03/2024 13:45	53	44	40			
10/03/2024 14:00	59	45	42			
10/03/2024 14:15	64	45	42			
10/03/2024 14:30	71	48	41			
10/03/2024 14:45	67	49	39			
10/03/2024 15:00	68	44	39			
10/03/2024 15:15	67	46	40			
10/03/2024 15:30	61	45	41			
10/03/2024 15:45	68	45	41			
10/03/2024 16:00	69	49	41			
10/03/2024 16:15	52	43	40			
10/03/2024 16:30	73	48	41			
10/03/2024 16:45	70	50	41			
10/03/2024 17:00	54	45	42			
10/03/2024 17:15	55	45	43			
10/03/2024 17:30	68	46	39			
10/03/2024 17:45	61	46	38			
10/03/2024 18:00	68	45	36			
10/03/2024 18:15	57	44	36			
10/03/2024 18:30	56	43	38			
10/03/2024 18:45	53	42	39			
10/03/2024 19:00	57	42	37			
10/03/2024 19:15	56	41	35			
10/03/2024 19:30	61	45	36			
10/03/2024 19:45	51	40	35			
10/03/2024 20:00	65	45	35			
10/03/2024 20:15	59	45	35			
10/03/2024 20:30	59	44	33			
10/03/2024 20:45	57	43	31			
10/03/2024 21:00	63	46	32			

Date and Time (start)	Position 1			Position 2		
	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB
10/03/2024 21:15	54	41	32			
10/03/2024 21:30	58	42	30			
10/03/2024 21:45	62	46	29			
10/03/2024 22:00	57	42	33			
10/03/2024 22:15	51	39	37			
10/03/2024 22:30	51	39	36			
10/03/2024 22:45	52	39	35			
10/03/2024 23:00	52	41	35			
10/03/2024 23:15	52	38	35			
10/03/2024 23:30	52	41	37			
10/03/2024 23:45	47	40	38			
11/03/2024 00:00	50	39	37			
11/03/2024 00:15	48	38	36			
11/03/2024 00:30	49	40	38			
11/03/2024 00:45	51	39	37			
11/03/2024 01:00	47	39	37			
11/03/2024 01:15	48	40	38			
11/03/2024 01:30	50	40	38			
11/03/2024 01:45	53	39	36			
11/03/2024 02:00	57	37	35			
11/03/2024 02:15	47	36	33			
11/03/2024 02:30	50	36	33			
11/03/2024 02:45	47	34	31			
11/03/2024 03:00	49	32	29			
11/03/2024 03:15	48	34	29			
11/03/2024 03:30	43	31	29			
11/03/2024 03:45	42	33	31			
11/03/2024 04:00	50	33	31			
11/03/2024 04:15	49	36	32			
11/03/2024 04:30	44	35	33			
11/03/2024 04:45	51	36	34			
11/03/2024 05:00	51	37	35			
11/03/2024 05:15	51	40	37			
11/03/2024 05:30	50	40	37			
11/03/2024 05:45	65	44	38			
11/03/2024 06:00	67	51	40			
11/03/2024 06:15	67	47	40			
11/03/2024 06:30	72	50	41			
11/03/2024 06:45	69	52	40			
11/03/2024 07:00	69	47	41			
11/03/2024 07:15	71	49	41			

Date and Time (start)	Position 1			Position 2		
	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB	L_{AFmax}, dB	$L_{Aeq,15min}$, dB	$L_{AF90,15min}$, dB
11/03/2024 07:30	62	48	42			
11/03/2024 07:45	63	49	45			
11/03/2024 08:00	61	47	42			
11/03/2024 08:15	71	48	41			
11/03/2024 08:30	72	51	42			
11/03/2024 08:45	69	48	42			
11/03/2024 09:00	74	50	42			
11/03/2024 09:15	73	51	43			
11/03/2024 09:30	59	45	41			
11/03/2024 09:45	65	47	41			
11/03/2024 10:00	66	47	41			
11/03/2024 10:15	71	47	41			
11/03/2024 10:30	60	45	41			
11/03/2024 10:45	62	44	41			
11/03/2024 11:00	68	47	40			
11/03/2024 11:15	65	50	41			
11/03/2024 11:30	65	46	41			
11/03/2024 11:45	77	53	41			
11/03/2024 12:00	73	50	41			
11/03/2024 12:15	72	46	40			
11/03/2024 12:30	73	47	41			
11/03/2024 12:45	71	49	40			
11/03/2024 13:00	76	52	40			
11/03/2024 13:15	66	45	40			
11/03/2024 13:30	76	53	41			
11/03/2024 13:45	70	45	40			
11/03/2024 14:00	82	57	40			

REPORT END