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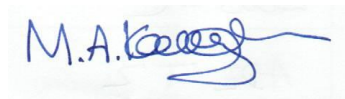
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TECHNICAL NOTE – Machinery Noise

Ball Green Farm, Stoke on Trent ST6 8AR

Client: David Clement
Ref. 20260619 9865 Ball Green TN-2
Date 19th June 2026
Revised 27th July 2026
Site Visited 29th May 2026 by S B Mellor
Prepared by: M A Kenyon MSc BSc MIOA



1.0 Introduction

In brief Martec have been asked to advise as to whether noise from “*machinery associated with the development*”, specifically the scraping operation, complies with the condition set by the local authority [Staffordshire Moorlands] in granting consent for an animal housing building etc at Ball Green Farm. The condition under SMD/2012/0179 states:

“8. The rating level of sound emitted from any fixed plant and/or machinery associated with the development at the use hereby approved shall not exceed background sound levels by more than 5dB(A) between the hours of 0700 - 2300 (taken as a 15 minute LA90 at the nearest sound-sensitive premises) and shall

not exceed the background sound level between 2300 - 0700 (taken as a 15 minute LA90 at the nearest/any sound-sensitive premises). All measurements shall be made in accordance with the methodology of BS4142 (2014) (Methods for rating and assessing industrial and commercial sound) and/or its subsequent amendments.

Where access to the nearest sound-sensitive property is not possible, measurements shall be undertaken at an appropriate location and corrected to establish the noise levels at the nearest sound-sensitive property. Any deviations from the LA90 time interval stipulated above shall be agreed in writing with the local planning authority."

The operator of the Farm, David Clement, has stated that:

"We scrape between 6 and 7 and feed around 8 in the morning and scrape at 5 O'clock at night. We only feed them once a day."

It is understood that the scraping operation takes 30 minutes or less to complete.

2.0 Noise Measurements

Martec [Steve Mellor] visited the site on Friday 29th May to make measurements of the 6am scraping operation. The equipment used for scraping is shown in Figure 1 below.

Measurements were made at a position close to the boundary with the residents

to the north, also at some 8m to the north of the building and also within the building.

Unfortunately, the unattended measurements close to the boundary were affected by birdsong close to the sound level meter dominating for much of the measurement period.



Figure 1: Scraping Tractor

Various measurements were made, but if we concentrate of the levels recorded at 8m from the northern side of the new animal housing building when waste from the cattle was being scraped. Full details of the measurements can be provided on request; the measurement location is shown in Figure 2 below:



Figure 2: Measurement Location 8m from Building

The level recorded 8m from the building during scraping operations was 49.7 LAeq.

The level at the monitoring position near the residential boundary during this time was 45.9 LAeq and no 'birdsong' was evident at this time.

Subjectively there are scrapes and bangs present in the noise, i.e. impulsive noise.

3.0 Background Noise

Martec has previously made long term measurements close to the northern residential boundary; full details are within our previous report Martec Ref. 20260112 9865 Ball Green Farm. Analysing this data the background noise level between 6am and 7am varies from 26 to 44 LA90 which is a very wide range with no clear modal value; however, the average level was 38 LA90 and this figure has been used to represent the background for the first scraping operation of the day.

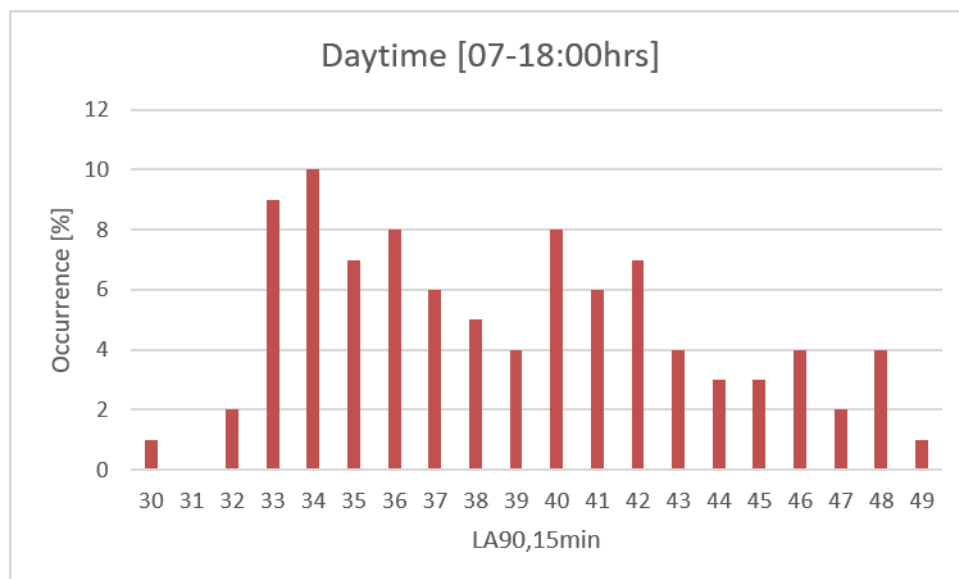


Figure 3: Distribution of Daytime Background Levels

Similarly, for the daytime period [working day 7-18:00hrs] the distribution is as shown in Figure 3 above; the average value was 41 LA90, but with a mode at 40 LA90, this lower value has been taken to represent background noise at this time of day.

Note the council may argue that the mode at 36 LA90 in Figure 3, is the appropriate figure to use for background.

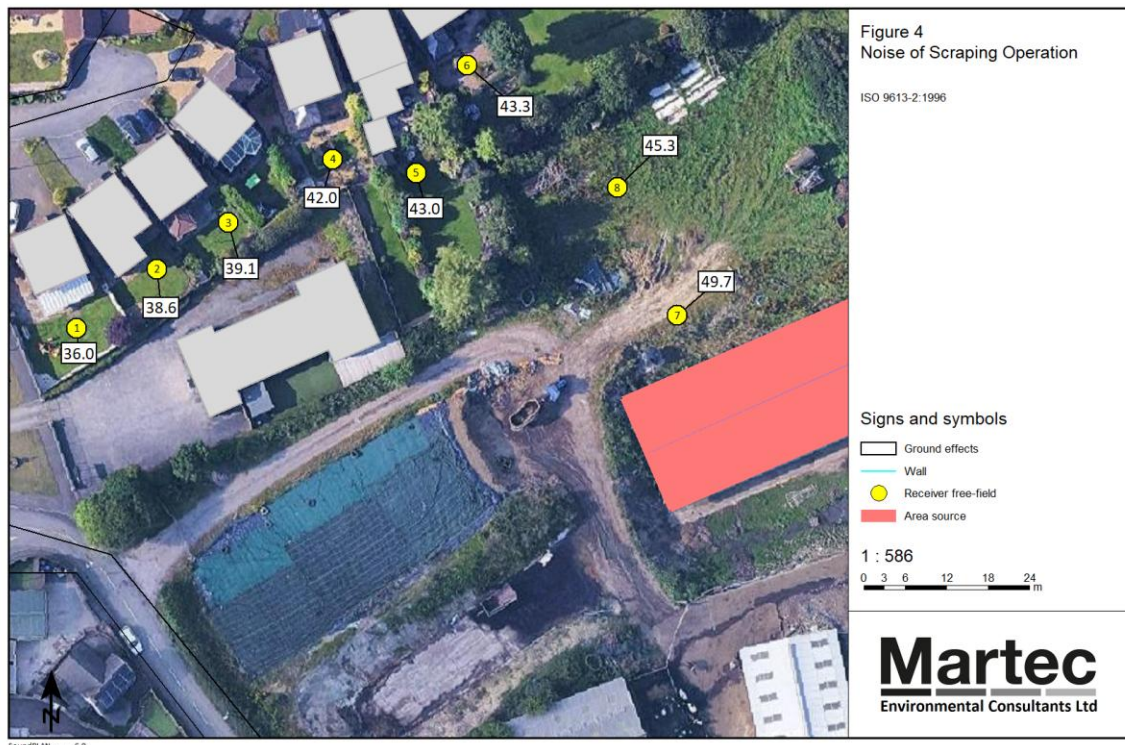
4.0 Noise Level at Nearby Properties

Whilst the background noise close to the northern residential boundary is probably representative of background noise levels actually close to the dwellings, scraping noise will probably fall off more rapidly.

Using Lidar Height data, architect's plans of the building and on site observations, it is possible to construct a computer model of the animal housing building and surrounding area using computer modelling software [SoundPLANv6.0]. The model was calibrated to produce a predicted noise level of 49.7 LAeq at the "8m measurement position", which was the noise level measured at this location.

Figure 4 below shows the predictions. Receiver No.7 [inside a yellow circle] corresponds to the measurement position 8m from the building, and Receiver 8 correspond to the measurement position near the residential boundary, and it can be seen that the predicted level of 45.3 LAeq shows good agreement with the level actually measured here of 45.9 LAeq tending to confirm the accuracy of the model.

The predicted levels at the nearby houses range from 36 to 43 LAeq to the nearest whole number.



5.0 Assessment

BS4142 is explained in greater detail in our previous report; the planning consent condition requires that the BS4142 rating level [measured/predicted level plus any penalties for character of the noise] should not exceed the background during the nighttime period [23-07:00 hrs] and during the daytime period can only exceed the background level by 5dB.

An important point is that at nighttime the assessment period, over which the noise is averaged, is 5 minutes; so as scraping takes approx. 30 minutes there is no reduction in the rating level at night; by contrast in the daytime the averaging

period is 1 hour, so the 30 minutes of scraping gets average [reduced] over an hour, so for daytime not only is the noise limit higher but the longer assessment period and higher daytime background levels during the working day [7-18:00hrs] also help.

If for the purposes of this assessment, we have assumed an impulsive character correction of +3dB would be applied.

The BS4142 nighttime assessment would be as follows:

Condition	Level
Measured/Predicted Ambient Level	43.3
Residual Level	0
Specific Noise Level	43
Tonal Correction	0
Impulsive Character	+3
Other Character	0
Intermittancy	0
Rating Level [Specific + Character Correction]	46
Background Noise Level LA90	38
Excess over Background	8
Indication of Adverse Impact but not Significant Adverse	

Table 1: Assessment of Nighttime Scraping Noise

The daytime assessment is shown in Table 2 below:

Condition	Level
Predicted Noise Level [30 minutes]	43.3
Specific Noise Level [1 hour]	40.3
Tonal Correction	0
Impulsive Character	+3
Other Character	0
Intermittancy	0
Rating Level [Specific + Character Correction]	43
Background Noise Level LA90	40
Excess over Background	3
Less than Indication of Adverse Impact, depending on the context	

Table 2: Assessment of Daytime Scraping Noise

6.0 Conclusion

Based on the above analysis, scraping operations within the nighttime period, would not comply with the local authority's noise limit condition.

Following consultation with the operator of the Farm, David Clement, it is understood that scraping operations on the farm can be altered such that scraping only occurs in the new building during daytime [07-23:00] hours.

On the basis on the above analysis, daytime scraping would comply with the planning consent condition.

APPENDIX 1

EXPLANATION OF ACOUSTIC TERMS

The dB or the decibel, is the unit of noise. The number of decibels or the level, is measured using a sound level meter. It is common for the sound level meter to filter or 'weight' the incoming sound so as to mimic the frequency response of the human ear. Such measurements are designated **dB(A)**.

A doubling of the sound is perceived, by most people, when the level has increased by 10 dB(A). The least discernible difference is 2 dB(A). Thus, most people cannot distinguish between, say 30 and 31 dB(A).

The Background level of noise is most commonly represented by the level which is exceeded for 90% of the time i.e. the LA90.

If a noise varies over time then the **equivalent continuous level, or LAeq**, is the notional constant level of noise which would contain the same amount of acoustic energy as the time varying noise.

The following table gives an approximate indication of the comparative loudness of various noises expressed in terms of the A weighted scale:

Source of noise	dB(A)	Nature of Noise
Inside Quiet bedroom at night	25-30	Very Quiet
Quiet office	40-45	
Rural background noise	35-45	
Normal conversational level	55-65	
Busy restaurant	65-75	
Inside suburban electric train	70-80	
Hand clap @ 1m	75-85	
HGV accelerating @ 5m away	85-90	Very Loud

APPENDIX 2

QUALIFICATIONS AND EXPERIENCE OF M. A. KENYON

My full name is Melville Alexander Kenyon. I am the principal of the firm of Martec Environmental Consultants Ltd, a consultancy company that specialises in environmental noise assessment and control. I graduated in 1982 with a Bachelor's degree in Engineering and subsequently a Master's degree in Environmental Acoustics. I have been a corporate member of the professional body for noise and vibration specialists, the Institute of Acoustics, since 1988, and have sat on the British Standards Committee dealing with noise in buildings [BS.8233:1999].

I have lectured at Liverpool John Moores University on the Diploma of Acoustics course and at Manchester Metropolitan University on their Environmental Health degree course. I have been an MSc Dissertation Supervisor at The University of Manchester.

The firm of Martec Environmental Engineering was formed in the 1970's and joined The Association of Noise Consultants in 1996. It is now known as Martec Environmental Consultants Ltd.

Since its formation, Martec has advised many groups of both residents and developers about the problems of noise and vibration in the environment.