

Ref: P26-170-TN01v1
Project: Dodford Farm, Chippenham
Date: 1 July 2026
To: Tim Barker, Wreyland Rural Planning
From: Graham Bowland BSc MIOA – Technical Director

Subject: Noise Impact Assessment re Proposed Mechanic's Workshop

1. This Technical Note has been prepared to summarise a noise impact assessment undertaken in connection with a planning application for conversion of an existing 1970s Atcost barn building at Dodford Farm, Dodford Lane, Chippenham, from agricultural use to a car mechanic's workshop.
2. Specifically, the development is intended to facilitate the re-location of Frankham Motor Services, currently of Chippenham Road, Lyneham.
3. The proposed development is located within a wider farmstead, which despite being addressed in Chippenham, is in fact several kilometres to the northeast of the town, in a rural location, but close to (~220m to the north of) the M4 motorway.
4. The proposed workshop building is to be accessed from an existing gate to an open courtyard area to the south of the barn. The courtyard also provides access to a traditional brick building, which is separated from the Atcost barn by an intervening lean-to shelter. The lean-to space does not form part of the development proposals, however the traditional building is included and is to be converted to an office for the mechanic's workshop. However, as no noise would be anticipated from this use, it is excluded from the scope of our assessment.
5. As well as agricultural uses, the wider site includes a children's day nursery and two independent dwellings.
6. The closest existing residence is owned and occupied by the landowner of the proposed development site, and is about 16m from the rear of the proposed workshop, i.e. towards the west. A further separate residence is located at about twice that distance towards the southwest.
7. The Atcost barn walls are formed of blockwork at lower level with cladding at higher level. There is a large garage-size timber door to each side of the building. The door to the west side will remain closed at all times, as this will be the rear part of the building. It is anticipated that the door to the east side will often be open during operational hours, however this faces directly away from the neighbouring residences.
8. The site location and the proposed development in the context of the wider site are shown in the aerial view in Figure 1.
9. The proposed workshop will typically operate during normal daytime working hours only, potentially including Saturday mornings, as per the existing hours of Frankham Motor Services.

Baseline Noise Survey

10. A survey of baseline environmental noise levels was carried out at the site over a representative period of proposed working hours on Thursday 18 June 2026.
11. Noise measurements were carried out in sequential 15-minute sample periods, at the location identified in Figure 1, over the period 1030-1300hrs.
12. The weather during the monitoring was dry with light winds of speeds typically below 3m/s from the southwest.
13. The noise monitoring was undertaken using a NTi Audio XL3 'Class 1' sound analyser (serial no. A3A-01459-F0), field calibrated before and after use using a Norsonic Acoustic Calibrator, Type 1251 (serial no. 20804), with no variation in calibration level observed. The measurement microphone was fitted with a windshield and mounted in free-field conditions at a height of ~2m above local ground.
14. Noise levels during the survey were very steady and were due to M4 motorway traffic. There was some vehicle activity associated with the existing farm and also the day nursery, however this did not significantly affect the overall noise levels.
15. The measured noise levels are presented in Appendix A and are summarised in Table 1.

Table 1: Summary of Baseline Noise Levels

	Measured Noise Level	
	Ambient dB L_{Aeq}	Background dB L_{A90}
Range	57-58	54-55
Logarithmic Average	58	-
Mean	-	55

Reference Workshop Noise Levels

16. Also on Thursday 18 June 2026, an inspection and reference noise level survey was carried out at the existing Frankham Motor Services site at Chippenham Road, Lyneham.
17. The Frankham Motor Services operation is relatively small, and hence noise generation as part of working practice is sparse and sporadic. This is typical, in our experience, even of larger car servicing operations.
18. As such, during our visit, no particular noise generating activity was taking place as a matter of ongoing work. Nonetheless, at our request, the main noise generating activities that can take place were operated for short periods each to facilitate sample noise readings. All relevant activities took place internally.
19. Reference noise levels were measured using a NTi Audio XL2-TA 'Class 1' sound analyser (serial no. A2A-23512-E1), field calibrated as above using a Norsonic Acoustic Calibrator, Type 1251 (serial no. 20804), with no variation in calibration level observed.

20. The following noise levels were taken, typically at about 2m or more from the activity, but in generally reverberant conditions. In each case, based on the advice provided by staff, an estimate of the very worst-case likely cumulative period of operation of each noise source over any daytime hour is provided:
- Ramp operation – 74 dB $L_{Aeq,T}$ – up to 3 minutes per hour (cumulative)
 - Grinding – 80 dB $L_{Aeq,T}$ – up to 6 minutes per hour (cumulative)
 - Welding – 79 dB $L_{Aeq,T}$ – up to 6 minutes per hour (cumulative)
 - Impact Wrench – 82 dB $L_{Aeq,T}$ – up to 3 minutes per hour (cumulative)
21. Based on the foregoing, an overall worst-case 1-hour internal operational noise level of 75dB $L_{Aeq,T}$ is derived. It is stressed that this noise level has been determined theoretically based on the very worst-case potential hour for noise generation, and this would be expected to be reached very rarely. More usually, noise levels will be lower, even when the workshop is busy with noise generating type activities, and for much of the time, as is usual, there will be no appreciable levels of noise generation.
22. Nonetheless, the predicted worst-case noise level agrees well with previous predictions made for assessments of other vehicle workshops, including for larger main dealership service centres, with many more ramps and operatives working simultaneously. Indeed, in such cases, noise levels of up to 76dB $L_{Aeq,T}$ have been predicted based on calculation of worst-case scenarios, whereas actual noise level during protracted busy periods have more typically been measured to be not in excess of 70dB $L_{Aeq,T}$. Accordingly, a reference internal noise level of 75dB $L_{Aeq,T}$ is considered suitably robust as a basis of assessment of worst-case noise levels at the proposed development.

Assessment Criteria

23. British Standard 4142: 2014 +A1:2019 '*Methods for rating and assessing industrial and commercial sound*' provides methods for rating and assessing sound of an industrial and/or commercial nature.
24. BS 4142 requires the 'rating' noise level for the operation to be compared with the L_{A90} background noise level in the absence of the operational noise. The 'rating' level is derived based on the 'specific' L_{Aeq} noise level attributable to the operation with an 'acoustic feature' penalty added for any noise sources which give rise to tonal, impulsive, intermittent, or other characteristics readily distinctive against the residual acoustic environment.
25. BS 4142 stipulates that impacts should be assessed over a reference time interval of 1-hour during the daytime (07:00-23:00).
26. An initial estimate of the impact of the operation is determined by subtracting the background level from the 'rating' level. BS 4142 states that:
- Typically, the greater this difference, the greater the magnitude of the impact
 - A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context
 - A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context
 - The lower the 'rating' level is relative to the measured background level, the less likely it is that the operation 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.

27. Where the initial estimate of the impact needs to be modified due to the context, BS 4142 states that all pertinent factors should be taken into account in determining whether the initial estimate of the impact needs to be modified, including:
- The absolute level of sound
 - The character and level of the residual sound
 - The sensitivity of the receptor and whether dwellings ... will already incorporate design measures that secure good internal and/or outdoor acoustic conditions, such as: i) façade insulation treatment, ii) ventilation and/or cooling, and iii) acoustic screening

Noise Impact Assessment

28. Based on the reference internal noise level of 75dB $L_{Aeq,T}$ for assessment of worst-case operational noise levels, with suitably representative octave band noise levels based on the measurements carried out at the existing Frankhams Motor Services site, noise break-out to the nearest neighbouring residence to the west of the site have been carried out.
29. The calculation is based upon a highly cautious and pessimistic set of sound reduction indices (SRIs) that have been adopted to account for the generally lightweight nature of the existing building, and also the potential for non-airtight sealing, especially around the west door of the building (albeit that this will be kept closed). The adopted SRIs equate to an overall acoustic performance of 12dB R_w which in reality would be likely to be well exceeded. The calculation also takes account of the building dimensions and the distance to the nearest neighbouring residence. This calculation is shown in Table 2.

Table 2: Predicted Noise Levels at Nearest Residence

	Octave Band Centre Frequency (Hz)							A wtd
	63	125	250	500	1k	2k	4k	
Predicted Internal Noise Level dB L_{eq} [A]	55	54	54	60	65	71	70	75
Building Sound Reduction Index, dB [B]	4	7	10	12	12	9	8	
Surface Area Correction (S=12x6m) [C]	19	19	19	19	19	19	19	
Distance Correction (d=16m) [D]	24	24	24	24	24	24	24	
Predicted Sound Pressure Level at Residence dB $L_{eq} = [A]-[B]+[C]-[D]-14$	31	27	24	28	33	42	42	43

30. To determine the worst-case 'rating' level, in line with BS 4142, it is considered appropriate firstly to apply a +3dB acoustic feature correction to account for the inevitably intermittent nature of any noise generation, and also as a precaution a further a +3dB correction to account for any potentially impulsive characteristic to the noise. This yields a 'rating' level of 49dB $L_{A,rTr}$.
31. Notwithstanding that, as described at each stage above, the predicted 'rating' level represents a highly cautious estimate that might be expected to be reached very rarely, if at all, the 'rating' level is 6dB below the representative prevailing background noise level. In line with BS 4142, this indicates a noise impact that is comfortably below the threshold equating to a 'low impact, depending on the context'.
32. In terms of contextual factors, the absolute predicted workshop noise level at the nearest residence of 43dB L_{Aeq} is 15dB lower than the prevailing ambient noise level of 58 dB L_{Aeq} . This confirms that a low noise impact is expected.

33. Due to the orientation of the site arrangement, no appreciable noise (relative to background noise) is anticipated via the potentially open door to the west side of the proposed workshop, as this faces directly away from neighbouring residences.
34. In conclusion of the foregoing assessment, no adverse noise impact is anticipated in relation to the proposed conversion of the existing 1970s Atcost barn building at Dodford Farm, Dodford Lane, Chippenham, from agricultural use to a car mechanic's workshop, based on normal working hours operation. Hence, there is no reason relating to noise why planning permission should not be granted.

Appendix A – Baseline Noise Survey Results

Start Time	Measured Noise Level dB			
	L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}
10:30	58	78	60	54
10:45	58	72	60	55
11:00	58	66	60	55
11:15	57	66	59	54
11:30	58	68	60	55
11:45	57	63	59	55
12:00	57	65	60	54
12:15	58	70	60	55
12:30	57	68	59	55
12:45	58	81	60	54

Key:



Project: P26-170
Ref: **Figure 1**
Title: Aerial View of Site