

***Chilton
Neighbourhood
Development Plan
2021 to 2031***



***Appendix 4
Traffic Noise Levels in Chilton***

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Background:

Comments received from the village survey confirm that traffic noise is perceived as a particular issue causing annoyance in Chilton. The purpose of this note is to provide some informal “spot” measurements of sound levels at various locations in Chilton, measured at different times and with different weather conditions.

Traffic noise is caused by engines, airflow and tyre contact sounds as vehicles move at speed. It increases sharply with the volume of traffic, the average speed, and if the road surface is wet. It appears to be louder downwind, a phenomenon caused by refraction, i.e. bending of the sound waves, arising from the fact that sound moves more slowly nearer the ground than above it, bending the sound towards the ground downwind and away from the ground upwind.

Other local villages have a similar issue with A34 traffic noise, and it is specifically mentioned in the Drayton Village Development Plan.

In locations such as Botley, reduction of the traffic noise levels has been achieved by a 50 mph speed limit, “quiet” road surfaces, and an efficient sound barrier system.

Sound level (loudness) is conventionally measured in decibels (dB). Typical noise sources and their dB levels are shown in Table 1:

Noise Source	Sound Level in dB
Whisper	30
Quiet Library	40
Moderate Rainfall	50
Normal Conversation	60
Vacuum Cleaner	70
Food Blender	80
Power Tools	90
Jet Take off at 300m	100
Live Rock Music	110
Chain Saw	120 – PAIN and ear damage!

Because of the way decibels are defined, an increase of 10 corresponds to an actual increase in sound level of a factor of two. Therefore, 50 dB is twice as loud as 40 dB and 70 dB is eight times as loud as 40 dB. Damage can occur at 120 dB or so.

The World Health Organisation (WHO) has set a guideline residential exposure limit to sound of 50-55 dB for daytime, and 40 dB for night-time. Above these levels, there is substantial evidence that there are adverse effects including annoyance, disturbed sleep patterns affecting cognitive functions (in

children) and certain cardiovascular diseases. The WHO limits are not statutory in the UK, and evidence shows that in the UK, more than half of residences are exposed to 55 dB or above, and 7% to more than 68 dB (daytime).

Method of Measurement: Most noise levels were measured at each site shown using a VL6708 sound level meter, within calibration and with a stated accuracy of +/- 1.5 decibels. The range set was that corresponding to the human ear response.

Other measurements were made using the “Sound Meter HQ” app on a Samsung tablet. These results were corrected using the comparative response curve in Appendix 1, established at different sound levels using a noise source set to approximate to the “white noise” sound of traffic. This app gave reasonably accurate values around the average sound level values found in Cilton, and on occasion provided a more convenient method of measurement than using the calibrated sound level meter. (The calibration has been included so that other householders can measure sound levels at their own properties, although each different type of smartphone/tablet should be calibrated to obtain accurate results).

Average traffic noise levels

Average traffic noise levels at different parts of the village are listed in Table 2. These are given as mean (of all measurements, up to six) and the highest and lowest recorded measurements at that location. No range implies only one measurement was made at that occasion.

Measurements were taken between 07:00 and 19:00 (daytime), and were on “normal” days, i.e. days on which the traffic noise was particularly loud were not specifically selected.

Table 2

Location	Mean Traffic Noise (dB)	Range (dB) Low-high
South Row	48	45-57
Village Hall	62	52-78
Lower Road (by bridge)	67	62-70
Lower Road (by allotments)	71	62-71
Knightsward, Lower Road	63	61-64
Rose & Crown, Main Street	55	49-66
Old Post Office, Main Street	48	45-50
Village Pump, Church Hill	50	49-51
13 Crafts End	59	55-62
Cross House, Church Hill	52	
Penfold Wick, Church Hill	56	52-60
All Saints’ church Lychgate	53	48-58
Severn Road	52	48-54
Pond Cottages, Newbury Road	54	
Cilton School	51	

Location	Mean Traffic Noise (dB)	Range (dB) Low-high
Jubilee Bridge (midpoint)	80-85	
Chilton Field (Community Room)	44	43-45
Chilton Field (Potteries Lane)	41	40-43
Chilton Field (end of Chilton Field Way)	44	41-50
Chilton Field (by allotments)	49	48-50

Variation at one site due to time, atmospheric conditions etc

Sound levels were measured at one site (South Row) over a Monday with little wind (NNW) and dry surfaces to give an indication of the variation in traffic noise levels during the day. This is shown as Figure 1. This shows the traffic noise is at its highest level during the morning rush hour, declining during the day, with another peak during the evening rush hour.

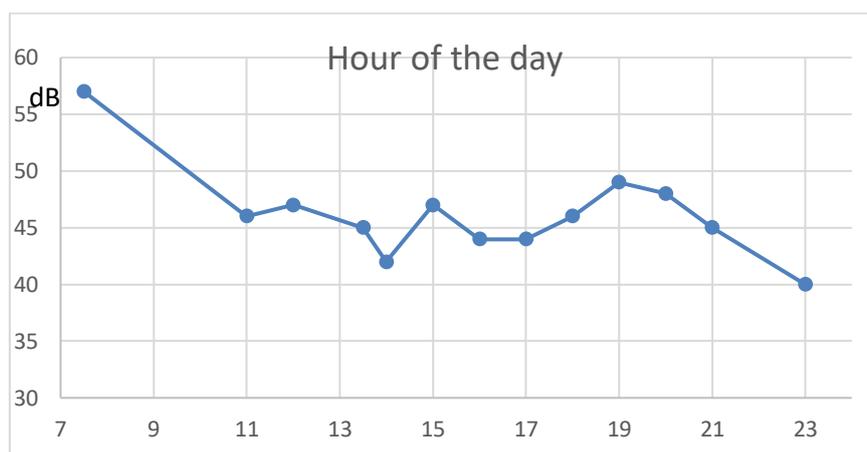


Figure 1: Sound levels at South Row over 1 day

At the same site, a different wind direction and whether it is raining or not can produce a change of 5–10 dB.

Typical peak night-time levels in South Row are about 47 dB, dropping to 37-40 dB during quiet periods.

Conclusions and recommendations

From a brief survey, traffic noise levels are clearly louder than desirable at a number of village locations, and are for example certainly enough to disturb normal conversation when householders are sitting outside.

Any changes to the A34 to increase traffic flow, or to increase the number of lanes, are likely to worsen the current noise level, and it would be necessary at that point in time to obtain a formal noise survey to an agreed protocol, with the aim to establishing the “before and after” scenario.