

APPENDIX 10.3
CONSTRUCTION ASSESSMENT METHODOLOGY

Appendix 10.3: Construction Assessment Methodology

Demolition and Construction Noise Assessment

The significance criteria for the construction noise assessment are based on 'The ABC Method' from BS 5228-1:2009+A1:2014. An extract describing this method is provided below.

Example Method 1 – The ABC Method

Table 1 Shows an example of the threshold of likely significant effect at dwellings when the Site_noise level rounded to the nearest decibel, exceeds the listed value. The table can be used as follows: for the appropriate period (night, evening / weekends or day), the ambient noise level is determined and rounded to the nearest 5 dB. This is then compared with the site noise level. If the site noise level exceeds the appropriate category value, then a significance effect is deemed to occur.

Table 1: Example threshold of significant effect at dwellings

Assessment category and threshold value period (L_{Aeq})	Threshold value, in decibels (dB)		
	Category A ^{A)}	Category B ^{B)}	Category C ^{C)}
Night-time (23.00-07.00)	45	50	55
Evenings and weekends ^{D)}	55	60	65
Daytime (07.00-19.00) and Saturdays (07.00-13.00)	65	70	75

NOTE 1: A likely significant effect is indicated if the site L_{AeqT} noise level, exceeds the threshold level for the Category appropriate to the ambient noise level

NOTE 2: If the ambient noise level exceeds the Category C threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a likely significant effect is indicated if the total L_{Aeq} noise level for the period increases by more than 3 dB due to site noise.

NOTE 3: Applied to residential receptors only.

A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.

B) Category B: threshold values to use when the ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.

C) Category C: threshold values to use when the ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.

D) 19.00-23.00 weekdays, 13.00-23.00 Saturdays and 07.00-23.00 Sundays.

(Source: BS 5228-1:2009+A1:2014, Page 119)

In this case, the threshold of significance has been determined using the ABC method of BS5228-1:2009+A1:2014. Calculations have not been undertaken for the evening or night-time periods as it is assumed that evening and night-time construction work would only be undertaken under exceptional circumstances and not without prior approval. Exceptional circumstances may include concreting operations where the pumping of concrete to foundations has to be a continuous process which may require operations outside the daytime period.

Table 2 presents the ABC BS5228 construction threshold daytime noise levels based on the measured derived environmental noise levels.

Table 2: Construction Threshold Noise Levels

SR Ref	SR Description	Daytime Ambient Noise Level dB $L_{Aeq,T}$	BS5228 ABC Threshold Noise Level dB $L_{Aeq,T}$	Distance from Site Boundary (approx. m)
A	Old School Lane	59	65	10
B	Stanfield Lane	59	65	10

Table 3 presents the magnitude of impact from demolition and construction noise used in the assessment of predicted daytime construction noise level. The magnitude is as detailed within DMRB LA 111i Table 3.12 'Construction time period – LOAEL and SOAEL' and Table 3.16 'Magnitude of impact and construction noise descriptors' and information provided within Appendix E of BS 5228:2009-1+A1:2014.

Table 3: Magnitude of Demolition, Construction Noise

Magnitude	Demolition & Construction Noise Level dB $L_{Aeq,T}$	Definition
Negligible	< Baseline (Prevailing) Noise Level	The effect is not of concern
Small	\leq Construction Threshold Noise Level	The effect is undesirable but of limited concern
Medium	>Threshold Noise Level to <Threshold +5dB (or ≤ 75 dB $L_{Aeq,T}$, whichever is highest)	The effect gives rise to some concern but is likely to be tolerable depending on scale and duration
Large	>Threshold +5dB (or >75dB $L_{Aeq,T}$, whichever is highest)	The effect gives rise to serious concern and it should be considered unacceptable, exception for very brief exposure depending on the absolute level

Where T is taken as 10 hours Monday to Friday and 5 hours Saturday.

Generic calculations were undertaken using the data and procedures set out in BS 5228-1:2009+A1:2014 for the noisiest construction operations, to derive indicative noise levels at selected sensitive receptors (SRs). The highest noise levels tend to be associated with plant associated with, piling, construction of the substructure and superstructure. During the fit-out, construction noise would be significantly lower. The calculations assume that plant would be operating at the closest point to the receptor and do not take account of any mitigation.

The noisiest construction operations and associated noise levels with no mitigation are considered to be as follows:

- Earthworks 85 dB $L_{Aeq,1h}$ at 10m
- CFA Piling 85 dB $L_{Aeq,1h}$ at 10m
- Concreting 86 dB $L_{Aeq,1h}$ at 10m
- Pavement 80 dB $L_{Aeq,1h}$ at 10m

Table 8.4.4 presents the generic plant and on-time used in the calculation of the demolition and construction noise levels. A maximum worst case noise level over a one hour period was calculated, assuming that plant would be operating at the closest point to the nearest receptor. In practice, noise levels would tend to be lower owing to greater separation distance as the works progress. They would also tend to reduce over a 10-hour working day (week-day, 5 hours Saturday) owing to periods of plant inactivity.

Table 8.4.2 Generic Construction Noise Levels

Phase / Plant	BS5228-1:1997+A1:2014	LAeq @10m	Kh	(t/T)*100	Partial Exposure	Barrier Attenuation	Noise Level @ NSR LAeq,1h (dB)	Overall LAeq,1h (dB)
Earthworks								85
Tracked Excavator (14t)	Table C2 ref 7	70	0	1	0	0	70.0	
Tracked Excavator (14t)	Table C2 ref 7	70	0	1	0	0	70.0	
Wheeled Backhoe Loader (8t)	Table C2 ref 8	68	0	1	0	0	68.0	
Hydraulic Vibratory Compactor (Tracked Excavator)	Table C2 ref 42	78	0	1	0	0	78.0	
Dozer (11t)	Table C2 ref 13	78	0	1	0	0	78.0	
Lorry (4-axle wagon)	Table C2 ref 34	80	0	1	0	0	80.0	
CFA								85
Crawler mounted rig - Continuous Flight Auger Piling Cast In-Situ	Table C3 ref 21	79	0	1	0	0	79.0	
Tracked Excavator	Table C3 Ref 23	68	0	1	0	0	68.0	
Tracked Excavator Inserting Cylindrical Metal Cage	Table C3 Ref 24	74	0	1	0	0	74.0	
Truck Mounted Concrete Pump + Boom Arm	Table C4 ref 29	80	0	1	0	0	80.0	
Concrete Mixer Truck	Table C4 Ref 20	80	0	1	0	0	80.0	
Pump Boom + Vibrating Poker	Table C4 ref 36	71	0	1	0	0	71.0	
Pump Boom + Vibrating Poker	Table C4 ref 36	71	0	1	0	0	71.0	
Concreting								86
Truck Mounted Concrete Pump + Boom Arm	Table C4 ref 29	80	0	1	0	0	80.0	
Concrete Mixer Truck	Table C4 Ref 20	80	0	1	0	0	80.0	
Pump Boom + Vibrating Poker	Table C4 ref 36	71	0	1	0	0	71.0	
Pavement Works								80
Road planer	Table C5 ref 7	82	0	0.25	-6	0	76.0	
Spreading chip and fill	Table C5 ref 12	77	0	0.25	-6	0	71.0	
Vibratory roller	Table C5 ref 20	75	0	0.25	-6	0	69.0	
Asphalt paver (+ tipper lorry)	Table C5 ref 30	75	0	0.25	-6	0	69.0	
Vibratory compactor (asphalt)	Table C5 ref 29	82	0	0.25	-6	0	76.0	
Lorry (4-axle wagon)	Table C2 ref 34	80	0	0.25	-6	0	74.0	

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