

Appendix 9.3: Demolition and Construction Noise Assessment

The significance criteria for the noise assessment of the preparation and construction works are based on 'The ABC Method' from BS 5228-1:2009+A1:2014. An extract describing this method is provided below in **Table 9.3.1**.

Table 9.3.1: ABC Categories

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 significant impact has been deemed to occur if the total L_{Aeq} noise level, including construction, exceeds the threshold level for the Category appropriate to the ambient noise level.

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

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, Page119

Calculations have not been undertaken for the evening or night-time periods as it is assumed that evening and night-time demolition and 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 9.3.2 presents the ABC BS5228 construction threshold daytime noise levels based on the measured prevailing noise levels for key sensitive receptors (SRs).

Table 9.3.2: Construction Threshold Noise Levels

SR Ref	SR Description	Measured Daytime Noise Level dB L _{Aeq,T}	BS5228 ABC Threshold Noise Level dB L _{Aeq,T}	Distance from approx. m			
				Site Boundary	Demolition	Sheet Piling	CFA
A	11-61 Watney Road	58 (CRTN 2)	65	25	150	35	85
B	2-26 Williams Lane	58 (CRTN 2)	65	10	22	110	15
C	1-69 Lower Richmond Road	71 (LT1)	75	10	20	40	25
D	Chertsey Court	63 (CRTN 1)	70	10	180	250	160
E	139 Lower Richmond Road	71 (LT1)	75	10	215	205	115
F	Thames Bank	59 (LT3)	65	10	15	15	15
G	Parliament Mews	59 (LT3)	65	10	10	135	15
H	Boat Race House (north)	59 (LT3)	65	10	85	75	15
I	Future Residential & School	-	65	15	n/a	15	15

Generic calculations were undertaken using the data and procedures set out in BS 5228-1:2009+A1:2014 for the noisiest construction phases, to derive indicative noise levels at selected sensitive receptors (SRs).

The highest noise levels tend to be associated with plant associated with, demolition, 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 SR, and do not take into account any existing or proposed screening. The noisiest construction phases and associated noise levels are considered to be as follows:

- Demolition 90 dB L_{Aeq,1h} at 10m
- Enabling Works 87 dB L_{Aeq,1h} at 10m
- Substructure, Basement Sheet Piling 88 dB L_{Aeq,1h} at 10m
- Substructure, Excavation 84 dB L_{Aeq,1h} at 10m
- Substructure, CFA 85 dB L_{Aeq,1h} at 10m
- Substructure Concreting 86 dB L_{Aeq,1h} at 10m
- Superstructure, Building Steel Frame 85 dB L_{Aeq,1h} at 10m
- Superstructure, Concrete Floor Slab (incl power floating) 86 dB L_{Aeq,1h} at 10m
- Public Realm & Landscaping 85 dB L_{Aeq,1h} at 10m
- Highways Pavement 80 dB L_{Aeq,1h} at 10m

Table 9.3.3 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 NSRs in the absence of mitigation. 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 9.3.3: Generic Construction Noise Levels at 10 Metres

Phase / Plant	Source	LW	LAeq @10m	Distance From Boundary to NSR (m)	Kh	(t/T)*100	Partial Exposure	Barrier Attenuation	Noise Level @ NSR LAeq,1h (dB)	Overall LAeq,1h (dB)
Demolition Buildings										90
High Reach Hydraulic Excavator	CAT 340F UHD	106	78	10	0	1.00	0	0	78	
Tracked Crusher (47t)	BS5228 Table C1 ref 14		82	10	0	0.25	-6	0	76	
Breaker Mounted on Wheeled Backhoe (7.4t)	BS5228 Table C1 ref 1		92	10	0	0.50	-3	0	89	
Dozer (11t)	BS5228 Table C2 ref 13		78	10	0	0.25	-6	0	72	
Hand Held Pneumatic Breaker (concrete foundation)	BS5228 Table C1 ref 6		83	10	0	0.25	-6	0	77	
Wheeled Backhoe Loader (8t)	BS5228 Table C2 ref 8		68	10	0	0.50	-3	0	65	
Compressor	BS5228 Table C5 ref 5		65	10	0	0.50	-3	0	62	
Lump Hammer	BS5228 Table C1 ref 19		69	10	0	0.25	-6	0	63	
Hand-held circular saw (Petrol-cutting concrete blocks)	BS5228 Table C4 ref 72		79	10	0	0.10	-10	0	69	
Scaffold poles and clips	BS5228 Table D7 ref 1		80	10	0	0.20	-7	0	73	
Tracked Mobile Crane	BS5228 Table C4 ref 50		71	10	0	0.50	-3	0	68	
Lorry x 2	BS5228 Table C2 ref 34		83	10	0	0.10	-10	0	73	
Enabling Works										87
Breaker Mounted on Wheeled Backhoe (7.4t)	BS5228 Table C1 ref 1		92	10	0	0.25	-6	0	86	
Hand Held Pneumatic Breaker (concrete foundation)	BS5228 Table C1 ref 6		83	10	0	0.25	-6	0	77	
Hand-held circular saw (Petrol-cutting concrete blocks)	BS5228 Table C4 ref 72		79	10	0	0.10	-10	0	69	
Tracked Crusher (47t)	BS5228 Table C1 ref 14		82	10	0	0.25	-6	0	76	
Wheeled Backhoe Loader (8t)	BS5228 Table C2 ref 8		68	10	0	0.50	-3	0	65	

Phase / Plant	Source	LW	LAeq @10m	Distance From Boundary to NSR (m)	Kh	(t/T)*100	Partial Exposure	Barrier Attenuation	Noise Level @ NSR LAeq,1h (dB)	Overall LAeq,1h (dB)
Lorry x 2	BS5228 Table C2 ref 34		83	10	0	0.10	-10	0	73	
Tracked Excavator (14t)	BS5228 Table C2 ref 7		70	10	0	1.00	0	0	70	
Sheet Piling (substructure)										88
Vibratory Sheet Piling	BS5228 Table C3 ref 8		88	10	0	1.00	0	0	88	
Dewatering Pumps	BS5228 Table C2 ref 45		65	10	0	1.00	0	0	65	
Water Jet Pump	BS5228 Table C3 ref 13		63	10	0	1.00	0	0	63	
Excavation (substructure)										84
Tracked Excavator (14t)	BS5228 Table C2 ref 7		70	10	0	1.00	0	0	70	
Tracked Excavator (14t)	BS5228 Table C2 ref 7		70	10	0	1.00	0	0	70	
Wheeled Backhoe Loader (8t)	BS5228 Table C2 ref 8		68	10	0	1.00	0	0	68	
Hydraulic Vibratory Compactor (Tracked Excavator)	BS5228 Table C2 ref 42		78	10	0	1.00	0	0	78	
Dozer (11t)	BS5228 Table C2 ref 13		78	10	0	1.00	0	0	78	
Lorry (4-axle wagon)	BS5228 Table C2 ref 34		80	10	0	1.00	0	0	80	
CFA (substructure)										85
Crawler mounted rig - Continuous Flight Auger Piling Cast In-Situ	BS5228 Table C3 ref 21		79	10	0	1.00	0	0	79	
Tracked Excavator	BS5228 Table C3 Ref 23		68	10	0	1.00	0	0	68	
Tracked Excavator Inserting Cylindrical Metal Cage	BS5228 Table C3 Ref 24		74	10	0	1.00	0	0	74	
Truck Mounted Concrete Pump + Boom Arm	BS5228 Table C4 ref 29		80	10	0	1.00	0	0	80	
Concrete Mixer Truck	BS5228 Table C4 Ref 20		80	10	0	1.00	0	0	80	
Pump Boom + Vibrating Poker	BS5228 Table C4 ref 36		71	10	0	1.00	0	0	71	
Concreting (substructure)										86

Phase / Plant	Source	LW	LAeq @10m	Distance From Boundary to NSR (m)	Kh	(t/T)*100	Partial Exposure	Barrier Attenuation	Noise Level @ NSR LAeq,1h (dB)	Overall LAeq,1h (dB)
Truck Mounted Concrete Pump + Boom Arm	BS5228 Table C4 ref 29		80	10	0	1.00	0	0	80	
Concrete Mixer Truck	BS5228 Table C4 Ref 20		80	10	0	1.00	0	0	80	
Pump Boom + Vibrating Poker	BS5228 Table C4 ref 36		71	10	0	1.00	0	0	71	
CM60 Concrete Batching Plant	Manufacturer's Data	111	83	10	0	1.00	0	0	83	
Building Steel Frame (superstructure)										85
Mobile Telescopic Crane	BS5228 Table C4 ref 39		77	10	0	1.00	0	0	77	
Mobile Telescopic Crane	BS5228 Table C4 ref 39		77	10	0	1.00	0	0	77	
Site Lift Worker	BS5228 Table C4 ref 62		66	10	0	1.00	0	0	66	
Diesel scissor lift	BS5228 Table C4 ref 59		78	10	0	1.00	0	0	78	
Diesel scissor lift	BS5228 Table C4 ref 59		78	10	0	1.00	0	0	78	
Power for welder diesel	BS5228 Table C4 ref 85		77	10	0	1.00	0	0	77	
Power for welder diesel	BS5228 Table C4 ref 85		77	10	0	1.00	0	0	77	
Building Floor Slab (superstructure)										86
Truck Mounted Concrete Pump + Boom Arm	BS5228 Table C4 ref 29		80	10	0	1.00	0	0	80	
Concrete Mixer Truck	BS5228 Table C4 Ref 20		80	10	0	1.00	0	0	80	
Pump Boom + Vibrating Poker	BS5228 Table C4 ref 36		71	10	0	1.00	0	0	71	
CM60 Concrete Batching Plant	Manufacturer's Data	111	83	10	0	1.00	0	0	83	
Power Float	Manufacturer's Data	105	77	10	0	1.00	0	0	77	
Public Realm & Landscaping										85
Tracked Excavator (14t)	BS5228 Table C2 ref 7		70	10	0	1.00	0	0	70	
Tracked Excavator (14t)	BS5228 Table C2 ref 7		70	10	0	1.00	0	0	70	
Wheeled Backhoe Loader (8t)	BS5228 Table C2 ref 8		68	10	0	1.00	0	0	68	

Phase / Plant	Source	LW	LAeq @10m	Distance From Boundary to NSR (m)	Kh	(t/T)*100	Partial Exposure	Barrier Attenuation	Noise Level @ NSR LAeq,1h (dB)	Overall LAeq,1h (dB)
Hydraulic Vibratory Compactor (Tracked Excavator)	BS5228 Table C2 ref 42		78	10	0	1.00	0	0	78	
Dozer (11t)	BS5228 Table C2 ref 13		78	10	0	0.50	-3	0	75	
Lorry (4-axle wagon)	BS5228 Table C2 ref 34		80	10	0	1.00	0	0	80	
Concrete Mixer Truck	BS5228 Table C4 Ref 20		80	10	0	0.25	-6	0	74	
Truck Mounted Concrete Pump + Boom Arm	BS5228 Table C4 ref 29		80	10	0	0.25	-6	0	74	
Mobile Telescopic Crane	BS5228 Table C4 ref 39		77	10	0	0.50	-3	0	74	
Highways - Pavement										80
Road planer	BS5228 Table C5 ref 7		82	10	0	0.50	-3	0	79	
Spreading chip and fill	BS5228 Table C5 ref 12		77	10	0	0.25	-6	0	71	
Vibratory roller	BS5228 Table C5 ref 20		75	10	0	0.25	-6	0	69	
Asphalt paver (+ tipper lorry)	BS5228 Table C5 ref 30		75	10	0	0.25	-6	0	69	
Vibratory compactor (asphalt)	BS5228 Table C5 ref 29		82	10	0	0.50	-3	0	79	
Lorry (4-axle wagon)	BS5228 Table C2 ref 34		80	10	0	0.25	-6	0	74	