

Appendix 12.2

Construction Noise and Vibration Assessment

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12.2.1 Construction site noise assessment

Plant items

Activity	Equipment	% on-time	Lw dB(A)	Source
Site clearance	Tracked Excavator	20	105	BS5228 Table C 2-19
	Wheeled Loader	40	104	BS5228 Table C 2-28
	Lorry	20	108	BS5228 Table C 2-34
	Dozer	20	103	BS5228 Table C 2-1
Excavation and earthworks	Dozer	40	108	BS5228 Table C 2-10
	Tracked Excavator	50	107	BS5228 Table C 2-14
	Backhoe Mounted Hydraulic Breaker	10	116	BS5228 Table C 5-1
	Wheeled Loader	40	104	BS5228 Table C 2-28
	Dump Truck (Tipping Fill)	40	107	BS5228 Table C 2-30
	Dump Truck (Empty)	20	115	BS5228 Table C 2-31
	Lorry	20	108	BS5228 Table C 2-34
Levelling and compaction	Dozer	40	108	BS5228 Table C 2-10
	Grader	20	114	BS5228 Table C 6-31
	Vibratory Roller	60	102	BS5228 Table C 2-39
	Vibratory Plate (Petrol)	60	108	BS5228 Table C 2-41
	Mini Excavator with Hydraulic Breaker	20	111	BS5228 Table C 5-2
Demolition of river wall	Hand-held Circular Saw (Petrol-Cutting concrete blocks)	20	107	BS5228 Table C 4-72
	Hand-held Pneumatic Breaker	20	111	BS5228 Table C 1-6
	Compressor for Hand-held Pneumatic Breaker	20	93	BS5228 Table C 5-5
	Dumper	40	104	BS5228 Table C 4-3
Utilities and services connections	Mini Tracked Excavator	10	96	BS5228 Table C 3-20
	Lorry with Lifting Boom	20	105	BS5228 Table C 4-53
	Diesel Generator	100	93	BS5228 Table C 4-86
	Roller	40	101	BS5228 Table C 2-38
	Hand-held Pneumatic Breaker	20	111	BS5228 Table C 1-6
Internal access road and SUDS	Wheeled Excavator	50	105	BS5228 Table C 4-12
	Lorry with Lifting Boom	20	105	BS5228 Table C 4-53
	Wheeled mobile Crane	20	98	BS5228 Table C 4-43
	Hand-held Pneumatic Breaker	20	111	BS5228 Table C 1-6

Activity	Equipment	% on-time	L _w dB(A)	Source
	Vibratory Roller	60	102	BS5228 Table C 2-39
Retaining wall construction	Tracked Excavator	10	107	BS5228 Table C 2-14
	Dozer	20	108	BS5228 Table C 2-10
	Wheeled Loader	40	104	BS5228 Table C 2-28
	Articulated Dump Truck	40	106	BS5228 Table C 4-2
	Vibratory Plate (Petrol)	60	108	BS5228 Table C 2-41
	Hand-held Pneumatic Breaker	20	111	BS5228 Table C 1-6
	Compressor for Hand-held Pneumatic Breaker	20	93	BS5228 Table C 5-5
	Concrete Mixer Truck	20	108	BS5228 Table C 4-20
	Diesel Generator	60	102	BS5228 Table C 4-84
	Concrete Pump	20	106	BS5228 Table C 3-25

Table 12.2.1: Construction activity assumptions

Assessment

Receptor information		BS 5228 threshold, dBL _{Aeq,T}	Predicted construction activity noise levels per activity							Potential EIA significant effect?	Policy effect
Ref	Name		Site clearance	Excavation and earthworks	Levelling and compaction	River wall demolition	Utilities and services ns	Access road	Retaining wall		
A	Vallea Court	65	51	55	53	44	41	43	47	No	NOEL
B	Masson Place	65	56	57	55	46	43	46	50	No	NOEL
C	Melia House	65	59	58	56	47	45	53	51	No	NOEL
D	Lincoln Gate	65	62	60	58	47	46	54	53	No	NOEL
E	Redbank House	65	67	65	63	47	49	56	55	Yes	LOAEL
F	Honey St / Collingham St	65	63	71	69	48	55	71	57	Yes	LOAEL
G	Fairholme Caravan Site	65	52	60	58	49	60	54	53	No	NOEL
H	Eden Leadership Academy	65	49	57	55	47	55	49	51	No	NOEL
I	Christabel Tower	65	43	51	56	44	44	40	40	No	NOEL
J	Sylvia Tower	65	58	60	53	44	57	49	51	No	NOEL
K	19-35 Dalton St	65	45	53	61	50	46	42	42	No	NOEL
L	Emmeline Tower	65	48	56	64	54	47	43	43	No	NOEL
M	Victoria Riverside	65	54	62	60	74	45	47	52	Yes	LOAEL
N	Angel Meadows Plot 4	65	52	56	54	56	42	44	49	No	NOEL
O	King of Kings School	65	53	55	53	54	42	44	48	No	NOEL

Table 12.2.2: Construction noise assessment

12.2.2 Construction site vibration assessment

Annex E of BS 5228-2 provides empirical formulae for estimating PPV vibration levels, and the likelihood that these levels will be exceeded, associated with various construction activities, including steady-state vibratory compaction. Predictions take into account the dimensions of the machinery, likely vibration amplitudes generated, as well as the distance to the receptor.

The following equation is found in Table E.1 and applies to steady-state vibratory compaction:

$$v_{res} = k_s \sqrt{n_d} \left[\frac{A}{x + L_d} \right]^{1.5}$$

Where

v_{res} = resultant PPV in mm/s

k_s = scaling factor (used 276, or 5% probability of value being exceeded)

n_d = number of vibrating drums (used 2)

A = maximum amplitude of drum vibration in mm (used 1.06)

L_d = width of drum in m (used 2.2)

x = distance to receptor in m

For the distance to receptor, 20m was chosen to represent a worst-case scenario.

12.2.3 Construction traffic assessment

Baseline road traffic flows for the surrounding highway network are taken from the Department of Transport website. The latest statistics have been used, which are from 2020 in all cases.

Construction traffic vehicle estimates have been provided by BAM. The monthly breakdown of vehicles accessing site, and therefore total movements, is shown in Table 12.2.3. The peak month – which has been used for the assessment – is highlighted in bold

Month	Number of vehicles	Number of movements
Aug-22	0	0
Sep-22	1030	2060
Oct-22	1295	2590
Nov-22	1629	3258
Dec-22	1619	3238
Jan-23	1619	3238
Feb-23	1761	3522
Mar-23	1761	3522
Apr-23	1761	3522
May-23	1786	3572
Jun-23	1342	2684
Jul-23	1367	2734
Aug-23	1342	2684
Sep-23	1367	2734
Oct-23	1468	2936
Nov-23	1135	2270
Dec-23	1140	2280
Jan-24	1140	2280
Feb-24	1140	2280
Mar-24	1140	2280
Apr-24	1032	2064
May-24	1126	2252
Jun-24	0	0
Jul-24	0	0

Table 12.2.3: Construction vehicle estimates (from BAM)

The assessment of noise level change is shown in Table 12.2.4 overleaf for a typical day during the peak month (May 2023).

Road	Baseline				Baseline + construction traffic				Change, dB
	Speed (km/h)	Total vehicles	No. HGVs (% of total)	Noise level, dBL _{A10,18hr}	Speed (km/h)	Total vehicles	No. HGVs	Noise level, dBL _{A10,18hr}	
Red Bank	50	2703	42 (2%)	61.2	50	2823	162 (6%)	62.8	+1.6
Cheetham Hill Rd	50	14021	374 (3%)	68.8	50	14141	494 (3%)	69.1	+0.3
Collyhurst Rd	50	3714	25 (1%)	62.3	50	3834	145 (4%)	63.5	+1.2
Queens Rd / A6010	50	13397	456 (3%)	68.8	50	13517	576 (4%)	69.2	+1.4

Table 12.2.4: Construction traffic noise assessment, typical day during peak month