

Table C.12 Supplementary sound level data on piling

Ref. no	Equipment	Pile depth	Width	Energy, power rating	Dolly	Sound power level L_{WA}	Soil	Cycle time	On-time	Activity equivalent continuous sound pressure level $L_{Aeq,T}$ at 10 m (one cycle)		
		m	m			dB		$\frac{A_1}{A_2} \min \frac{A_1}{A_2}$ %		dB		
Steel piling												
1	Pressed-in steel tubular piles; power pack pressing unit (does not include ancillary plant including mobile crane)	—	—	225 kW	—	96	—	—	—	68		
		—	—	Available up to 4 MN pressing force	—	83	—	—	—	55		
2	Hydraulic power pack	—	—	75 kW to 900 kW	—	101 to 114	—	—	100	73 to 86		
Driven cast in situ piling												
3	Junttan PM25, hydraulic hammer	16.75	0.38 dia.	4 t, 0.6 m drop	Sand	103 ^{A)}	12 m fill onto stiff clay	30	65	84		
4				4 t, 0.6 m drop	Sand	103 ^{A)}				85		
5				4 t, 0.6 m drop	Sand	119 ^{A)}				101		
6				4 t, 0.6 m drop	Sand	117 ^{A)}				98		
7	Junttan PM26, hydraulic hammer	10.90	0.34 dia.	5 t, 0.6 m drop	Sand	104	6 m fill, 4 m alluvium overlying mudstone	30	65	92		
8				5 t, 0.6 m drop	Sand	108	5 m fill overlying firm to stiff clay			20	50	80
9				5 t, 0.6 m drop	Sand	132				25	50	107
10				5 t, 0.6 m drop	Sand	117	2 m fill, 7 m alluvium overlying medium dense gravel			20	50	98

Table C.12 Supplementary sound level data on piling (continued)

Ref. no	Equipment	Pile depth	Width	Energy, power rating	Dolly	Sound power level L_{WA}	Soil	Cycle time	On-time	Activity equivalent continuous sound pressure level $L_{Aeq, T}$ at 10 m (one cycle)
		m	m			dB		min	%	dB
11	NCK 605, hanging leaders and drop hammer	20.90	0.34 dia.	4 t, 0.9 m drop	Aluminium	121	4 m fill, 3 m v. loose sand, 2 m peat, 2 m v. soft clay, 10 m v. soft silt onto v. dense sand	30	65	93
12		20.90	0.34 dia.	4 t, 0.9 m drop	Aluminium	146		30	65	61
13		16.50	0.43 dia.	4 t, 0.9 m drop	Timber	88	1 m fill, 10 m alluvium, 2 m loose to medium dense gravel onto stiff clay	40	80	80
14		17.70	0.43 dia.	4 t, 0.9 m drop	Aluminium	103		40	80	88
15		17.70	0.43 dia.	4 t, 0.9 m drop	Aluminium	122		40	80	96
16		17.70	0.43 dia.	4 t, 0.9 m drop	Plastic	118		40	80	90
17		7.60	0.34 dia.	4 t, 0.9 m drop	Aluminium	142	4 m fill, 3 m alluvium overlying very dense sand	25	75	101
18		20.80	0.43 dia.	4 t, 0.9 m drop	Aluminium	122	3 m fill, 10 m alluvium, 5 m gravel onto mudstone	40	80	96
19		11.50	0.34 dia.	4 t, 0.9 m drop	Aluminium	116	2 m fill, 3 m alluvium overlying medium dense gravel	30	65	93
20		11.10	0.34 dia.	4 t, 0.9 m drop	Aluminium	110		30	65	91
21		14.60	0.38 dia.	4 t, 0.9 m drop	Aluminium	120	2 m fill onto firm becoming stiff clay	40	80	92
22		11.10	0.34 dia.	4 t, 0.9 m drop	Aluminium	100	2 m fill, 3 m alluvium overlying medium dense gravel	30	65	72
23		8.30	0.43 dia.	4 t, 0.9 m drop	Aluminium	112		30	65	93
24		15.00	0.38 dia.	4 t, 0.9 m drop	Aluminium	109	2 m fill, 7 m alluvium overlying chalk	30	65	90
25		15.50	0.34 dia.	4 t, 0.9 m drop	Aluminium	112	2 m fill, 6 m alluvium overlying firm to stiff clay	30	65	91

Table C.12 Supplementary sound level data on piling (continued)

Ref. no	Equipment	Pile depth m	Width m	Energy, power rating	Dolly	Sound power level L_{WA} dB	Soil	Cycle time $\frac{A_1}{A_2} \min \frac{A_1}{A_2}$ %	On- time %	Activity equivalent continuous sound pressure level $L_{Aeq, T}$ at 10 m (one cycle) dB	
26	NCK 605, hanging leaders and drop hammer	15.50	0.38 dia.	4 t, 0.9 m drop	Timber	107	2 m fill, 13 m alluvium overlying medium dense sand	25	50	79	
27		14.50	0.34 dia.	4 t, 0.9 m drop	Aluminium	115		5 m fill, 3 m alluvium, 7 m firm to stiff clay onto mudstone	30	65	87
28		16.50	0.34 dia.	4 t, 0.9 m drop	Aluminium	107	7 m fill, 1 m peat, 4 m alluvium, 8 m gravel onto chalk	40	80	79	
29		16.50	0.34 dia.	4 t, 0.9 m drop	Aluminium	120		40	80	92	
30		19.50	0.43 dia.	4 t, 0.9 m drop	Aluminium	120		40	80	92	
31		19.50	0.43 dia.	4 t, 0.9 m drop	Aluminium	109		40	80	81	
32	11.50	0.43 dia.	4 t, 0.9 m drop	Timber	113	6 m fill, 4 m firm clay onto medium dense gravel	30	65	85		
33	NCK Atlas, hanging leaders and drop hammer	23.00	0.38 dia.	4 t, 0.9 m drop	Aluminium	106	7 m fill, 1 m peat, 4 m alluvium, 8 m gravel onto chalk	40	80	78	} 92
34		23.00	0.38 dia.	4 t, 0.9 m drop	Aluminium	120		40	80	92	
Driven precast concrete piling											
35	Junttan PM25, hydraulic hammer	—	—	7 t, 0.6 m drop	Sand	103	—	—	—	94	
36		—	—	9 t, 0.7 m drop	Polypenco	106	—	—	—	86	
37		—	—	7 t, 0.6 m drop	Polypenco	111	—	—	—	91	
38		—	—	7 t, 0.6 m drop	Sand	108	—	—	—	88	
39		—	—	7 t, 0.6 m drop	Sand	111	—	—	—	93	
Continuous flight auger piling											
40	Soilmec R622	25.00	0.9 dia.	—	None	106	7 m alluvium, 7 m firm to stiff clay, 2 m medium dense sand, 2 m clay onto sand	133		81	
41	Soilmec CM45	11.80	0.4 dia.	—	None	105	8 m fill overlying sandstone	50	95	80	
42		17.50	0.45 dia.	—	None	108	5 m fill, 2 m sand onto firm becoming stiff clay	55	95	83	
43	Soilmec CM48	14.80	0.45 dia.	134 kW	None	102	2 m fill, 7 m soft to firm clay, 6 m medium dense clayey sand onto sandstone	80	95	77	} 77
44		14.80	0.45 dia.	134 kW	None	98		80	95	73	

Table C.12 Supplementary sound level data on piling (continued)

Ref. no	Equipment	Pile depth	Width	Energy, power rating	Dolly	Sound power level L_{WA}	Soil	Cycle time	On-time	Activity equivalent sound pressure level $L_{Aeq,T}$ at 10 m (one cycle)
		m	m			dB		L_{A1} min L_{A2} %	%	dB
45	Soilmec R412	12.00	0.6 dia.	155 kW	None	100	2 m fill overlying firm to stiff becoming very stiff clay with limestone bands	55	95	75
46		7.50	0.6 dia.	155 kW	None	102		3 m fill overlying siltstone	25	90
47		10.00	0.45 dia.	155 kW	None	102	5 m fill, 6 m stiff sandy clay onto sandstone	25	90	77
48		10.00	0.45 dia.	155 kW	None	102		25	90	77
49		10.00	0.45 dia.	155 kW	None	101		25	90	76
Vibroflotation										
50	Vibrocat, top-feed, electric vibrator	3.50	~0.45 dia.	50 kW	None	115	Firm to stiff clay	10	70	85
51	NCK 305, top-feed, electric vibrator	3.00	~0.45 dia.	50 kW	None	119	Mixed medium dense granular / firm cohesive soils	10	70	89
52	Vibrocat, bottom-feed, electric vibrator	3.30	~0.55 dia.	50 kW	None	96		10	70	65
53	Vibrocat, VCC, electric vibrator	8.50	0.43 dia.	50 kW	None	115		25	85	85
54	Minicat, top-feed, electric vibrator	3.40	~0.50 dia.	50 kW	None	108		20	85	77
55	Minicat, top-feed, electric vibrator	3.00	~0.50 dia.	50 kW	None	115		15	80	85
56	NCK 305, top-feed, electric vibrator	3.00	~0.50 dia.	50 kW	None	111		15	80	81
57	Vibrocat, bottom-feed, electric vibrator	3.0	~0.55 dia.	55 kW	None	102	Soft to firm clay	10	70	72
58	Vibrocat, bottom-feed, electric vibrator	3.70	~0.50 dia.	50 kW	None	119	Mixed medium dense granular/ firm cohesive soils	10	70	89
59	Minicat, top-feed, electric vibrator	4.70	~0.45 dia.	55 kW	None	123		10	70	93
60	Vibrocat, bottom-feed, electric vibrator	6.00	~0.50 dia.	55 kW	None	129		15	80	87
61	Minicat, top-feed, electric vibrator and prebore rig	3.50	~0.50 dia.	55 kW	None	115	Very loose cohesionless soils	10	70	84
62	Minicat, top-feed, electric vibrator	1.70	~0.55 dia.	55 kW	None	110	Loose cohesionless soils	10	70	79

Table C.12 Supplementary sound level data on piling (continued)

Ref. no	Equipment	Pile depth m	Width m	Energy, power rating	Dolly	Sound power level L_{WA} dB	Soil	Cycle time \bar{A}_1 min \bar{A}_1 %	On-time %	Activity equivalent continuous sound pressure level \bar{A}_1 $L_{Aeq, T}$ \bar{A}_1 at 10 m (one cycle)
										dB
63	Minicat, top-feed, electric vibrator	4.30	~0.40 dia.	55 kW	Polyurethane	113	Mixed medium dense granular/ firm cohesive soils	15	80	83
64	Minicat, top-feed, electric vibrator	4.30	~0.40 dia.	55 kW	Polyurethane	105		15	80	75
65	NCK 305, top-feed, electric vibrator	4.00	~0.50 dia.	55 kW	None	103		15	80	73
66	Vibrocat, bottom-feed, electric vibrator	2.80	~0.55 dia.	55 kW	None	112	Loose to medium dense cohesionless soils	10	70	82
67		2.50	~0.55 dia.	55 kW	None	111		10	70	81
68		2.50	~0.55 dia.	55 kW	None	114		10	70	84
69		3.50	~0.55 dia.	55 kW	None	113		10	70	83
70	Vibrocat, bottom-feed, electric vibrator	—	—	55 kW	None	113	Unknown	—	—	85
71	Vibrocat, bottom-feed, electric vibrator	—	—	55 kW	None	106		—	—	75
72	Vibrocat, VCC, electric vibrator	—	—	55 kW	None	91		—	—	60
Dynamic compaction										
73	—	—	2.4 × 2.4	8 t, 8 m drop	None	102	Refuse / contaminated fill	1	80	81
74	NCK Ajax	—	2.4 × 2.4	8 t, 8 m drop	None	101	Refuse / contaminated fill	1	80	81
75	NCK Ajax	—	2.4 × 2.4	8 t, 12 m drop	None	105	Mixed fill	1	80	84
76	Supra 1100	—	2.4 × 2.4	15 t, 10 m drop	None	101		1	80	81
77	NCK Eiger C120	—	2.4 × 2.4	15 t, 10 m drop	None	102		1	80	81

Table C.12 Supplementary sound level data on piling (continued)

Ref. no	Equipment	Pile depth m	Width m	Energy, power rating	Dolly	Sound power level L_{WA} dB	Soil	Cycle time \bar{A}_T min \bar{A}_T	On-time %	Activity equivalent continuous sound pressure level $L_{Aeq, T}$ \bar{A}_T at 10 m (one cycle) dB
78	NCK Ajax	—	2.4 × 2.4	8 t, 12 m drop	None	102	Refuse / contaminated fill	1	80	82
79		—	2.4 × 2.4	8 t, 12 m drop	None	105		1	80	69
80		—	2.4 × 2.4	8 t, 12 m drop	None	105		1	80	78
81		—	2.4 × 2.4	8 t, 12 m drop	None	99		1	80	79
82		—	2.4 × 2.4	8 t, 12 m drop	None	99		1	80	78
83		—	2.4 × 2.4	8 t, 12 m drop	None	102		1	80	81
84		—	2.4 × 2.4	8 t, 12 m drop	None	110		1	80	90
85		—	2.4 × 2.4	8 t, 12 m drop	None	109		1	80	88
86		—	2.4 × 2.4	8 t, 12 m drop	None	109		1	80	88
87		—	2.4 × 2.4	8 t, 12 m drop	None	107		1	80	87
88		—	2.4 × 2.4	8 t, 12 m drop	None	106		1	80	86
89		—	2.4 × 2.4	8 t, 12 m drop	None	108		1	80	87
90		—	2.4 × 2.4	8 t, 12 m drop	None	107		1	80	87
91		—	2.4 × 2.4	8 t, 12 m drop	None	107		1	80	87
92		—	2.4 × 2.4	8 t, 12 m drop	None	109		1	80	88
93		—	2.4 × 2.4	8 t, 12 m drop	None	111		1	80	91
94		—	2.4 × 2.4	8 t, 12 m drop	None	106		1	80	86
95		—	2.4 × 2.4	8 t, 12 m drop	None	107		1	80	86
96		—	2.4 × 2.4	8 t, 12 m drop	None	109		1	80	89
97		—	2.4 × 2.4	8 t, 12 m drop	None	109		1	80	89
98	—	2.4 × 2.4	8 t, 12 m drop	None	109	1	80	88		
99	—	2.4 × 2.4	8 t, 3 m drop	None	104	1	80	83		
Coring through existing piles										
100	Bauer BG36 coring reinforced concrete pile	—	—	—	None	—	—	—	—	72 to 87
101	Junttan PM18/30 coring reinforced concrete pile	—	—	—	None	—	—	—	—	76 to 90

A) Owing to local circumstances the attenuation rate was not standard so propagation values have been amended.