Technical Appendix 3 Construction Noise Impact Assessment

1. Introduction 2
2. Construction Equipment 3
3. Construction Noise Assessment Results 7
3.1 Calculation Assumptions 7
3.2 Assessment Results 7

1. Introduction

The purpose of this appendix is to provide the conservative assumptions of equipment utilisation used for the Construction Noise Impact Assessment (CNIA) as well as the results of that assessment.

A table is provided with the expected equipment for each construction phase, as well as the percentage of time each piece of equipment is expected to be used in a standard working day. Information was collated from estimations provided by the Principal Contractor, and sound power levels from Annex C of BS5228-1 Code of practice for noise and vibration control on construction and open sites. Results of calculations to obtain a corrected sound power level based on the expected quantity and on time of the equipment have also been included. If changes occur to the planned equipment an updated CNIA will be prepared.

A table is provided with the predicted noise levels at the NSRs for each construction phase and distance to the proposed works. The results have been compared to the construction noise limit of 65dB for daytime working hours, as defined in BS5228-1. The assessment follows *British Standard 5228-1:2009 +A1:2014 (BS5228), Code of Practice for Noise and Vibration Control on Construction and Open Sites*, and the results are discussed in **Chapter 14 – Noise and Vibration** of the Environmental Impact Assessment.

2. Construction Equipment

Table 2-1 Construction Equipment and Associated Noise Levels for BULK EARTH WORKS

Plant Item	BS 5228 Reference	Quantity	Utilisation %	Sound Pressure @ 10m(dB(A))	Sound Pressure @ 10m corrected for quantity and utilisation (dB(A))
Tracked Excavator	C4.17 Tracked excavator	2	80%	71	73
Tipper Wagons	D3.112 Tipper lorry	4	100%	85	91
Breaker	C5.6 Hand-held pneumatic breaker	1	50%	95	92
Water Pump	C2.45 Water pump	2	100%	73	76
Total					95

Table 2-2 Construction Equipment and Associated Noise Levels for CIVIL WORKS

Plant Item	BS 5228 Reference	Quantity	Utilisation %	Sound Pressure @ 10m(dB(A))	Sound Pressure @ 10m corrected for quantity and utilisation (dB(A))
Tracked Excavator	C4.17 Tracked excavator	2	50%	71	71
Tipper Wagons	D3.112 Tipper lorry	2	100%	85	88
Vibrating Roller	C5.21 Vibratory roller	1	50%	74	71
Concrete Wagon	C4.24 Concrete pump + cement mixer truck (discharging)	2	20%	67	63
Water Pump	C2.45 Water pump	1	10%	73	63
Total					88

Table 2-3 Construction Equipment and Associated Noise Levels for TRANSFORMER INSTALLATION

Plant Item	BS 5228 Reference	Quantity	Utilisation %	Sound Pressure @ 10m(dB(A))	Sound Pressure @ 10m corrected for quantity and utilisation (dB(A))
Mobile Telescopic Crane	C4.38 Wheeled Mobile telescopic crane	1	90%	78	78
Lorry	C2.34 Lorry	1	50%	80	77
Total					80

Table 2-4 Construction Equipment and Associated Noise Levels for BALANCE OF PLANT WORK

Plant Item	BS 5228 Reference	Quantity	Utilisation %	Sound Pressure @ 10m(dB(A))	Sound Pressure @ 10m corrected for quantity and utilisation (dB(A))
Roto Telehandler	C4.54 Telescopic handler	1	50%	79	76
MEWP	C4.57 Lifting platform	2	50%	67	67
Total					77

Table 2-5 Construction Equipment and Associated Noise Levels for BUNDING, LANDSCAPING AND REMOVAL OF TEMPORARY LAYDOWN AND WELFARE

Plant Item	BS 5228 Reference	Quantity	Utilisation %	Sound Pressure @ 10m(dB(A))	Sound Pressure @ 10m corrected for quantity and utilisation (dB(A))
Tracked Excavator	C4.17 Tracked excavator	1	60%	71	69
Dumper Wagons	C4.4 Dumper	1	60%	76	74
Hiab Wagon	C4.53 Lorry with lifting boom	1	50%	77	74
Tipper Wagon	D3.112 Tipper lorry	1	100%	85	85
Total					86

3. Construction Noise Assessment Results

3.1 Calculation Assumptions

- Ground absorption factor 0.5 for mixed soft and hard ground
- Free-field
- No change in elevation or screening between source and receiver

3.2 Assessment Results

Table 3-1 BS 5228 Assessment – SIMULTANEOUS PHASES

NSR	Shortest distance to the edge of the site (m)	Total Equivalent Noise Level at 10 m from Simultaneous Works (dB)	Sound Pressure Level at Receptor (dB)	Construction Noise Exceedance
1	550	96	58	-7
2	407	96	61	-4
3	464	96	60	-5
4	536	96	58	-7
5	591	96	57	-8
6	879	96	53	-12

Table 3-2 BS 5228 Assessment – BULK EARTH WORKS

NSR	Shortest distance to the edge of the site (m)	Total Equivalent Noise Level at 10 m from Bulk Earth Works (dB)	Sound Pressure Level at Receptor (dB)	Construction Noise Exceedance
1	550	95	56	-9
2	407	95	59	-6
3	464	95	58	-7
4	536	95	57	-8
5	591	95	56	-9
6	879	95	52	-13

Table 3-3 BS 5228 Assessment – CIVIL WORKS

NSR	Shortest distance to the edge of the site (m)	Total Equivalent Noise Level at 10 m from Civil Works (dB)	Sound Pressure Level at Receptor (dB)	Construction Noise Exceedance
1	550	88	50	-15
2	407	88	53	-12
3	464	88	52	-13
4	536	88	50	-15
5	591	88	49	-16
6	879	88	45	-20

Table 3-4 BS 5228 Assessment – TRANSFORMER INSTALLATION

NSR	Shortest distance to the edge of the site (m)	Total Equivalent Noise Level at 10 m from Transformer installation (dB)	Sound Pressure Level at Receptor (dB)	Construction Noise Exceedance
1	550	80	42	-23
2	407	80	45	-20
3	464	80	44	-21
4	536	80	42	-23
5	591	80	41	-24
6	879	80	38	-27

Table 3-5 BS 5228 Assessment – BALANCE OF PLANT WORK

NSR	Shortest distance to the edge of the site (m)	Total Equivalent Noise Level at 10 m from Balance of Plant Work (dB)	Sound Pressure Level at Receptor (dB)	Construction Noise Exceedance
1	550	77	38	-27
2	407	77	41	-24
3	464	77	40	-25
4	536	77	39	-26
5	591	77	38	-27
6	879	77	34	-31

Table 3-6 BS 5228 Assessment – BUNDING, LANDSCAPING AND REMOVAL OF TEMPORARY LAYDOWN AND WELFARE

NSR	Shortest distance to the edge of the site (m)	Total Equivalent Noise Level at 10 m from Bunding Works (dB)	Sound Pressure Level at Receptor (dB)	Construction Noise Exceedance
1	550	86	48	-17
2	407	86	50	-15
3	464	86	49	-16
4	536	86	48	-17
5	591	86	47	-18
6	879	86	43	-22