Appendix 9.3 Construction Noise Assessment

17 November 2022

Introduction

This Appendix provides additional information on the construction noise assessment completed by WSP.

Construction Noise Assessment

1.1. It is inevitable with any proposed major development that there will be some disturbance caused to those nearby during the construction works. However, disruption due to construction is localised and temporary in nature.

1.2. Nearby receptors sensitive to construction noise have been identified in Figure 9.1.

1.3. At this stage, full details of the plant associated with the works and potantial phasing of construction are not yet known. Therefore, predictions of the likely noise levels and associated impacts have been made based on WSP's experience of similar schemes elsewhere. The results are considered indicative of the likely noise levels during the works.

1.4. A more detailed assessment will be undertaken at a later stage once the principal contractor has been appointed and detailed construction method statements are available. A requirement for this is to be included in a Construction Management Plan (CMP) to be submitted to and approved by MCC.

1.5. Standard working hours for the delivery of the Proposed Development will be 07:30 to 18:00 hours, from Monday to Friday and 08:00 to 14:00 hours on Saturdays with no working on Sundays or bank holidays without prior agreement with MCC.

1.6. It is anticipated that noise emissions from the construction site will be highest during the site preparation and substructure phases of construction. Construction plant noise source data has been taken from BS 5228-1 [Ref. 11].

1.7. Table 1 details the assumed plant types, quantities and utilisation rates used in the construction noise level calculations for each of the above mentioned working phases. Also presented are the source noise levels (including associated references) that have been applied for each plant item.

Table 1- Assumed Construction Plant Details

Construction phase	Plant description	Number of items	L_{Aeq} @10m (dB)	BS 5228 Table ref.	Duration on-time %
Site preparation	Breaker mounted excavator	1	90	C.01 .9	50
	Tracked excavator	2	76	C.02 .5	50
	Dump truck	2	79	C.02 .30	40
	Wheeled Loader	1	79	C.02 .26	10
	Lorry	1	80	C.02 .34	20
	Hand-held pneumatic breaker	1	83	C.01 .6	20
	Tracked crusher	1	82	C.01 .14	30
	Road Sweeper	1	76	C.04 .90	40
Substructure works	Tracked excavator	1	76	C.02 .5	50
	Truck mixer with pump	1	75	C.04 .26	50
	Lifting platform	1	63	C.04 .58	30
	Skip wagon	2	78	C.08 .21	60
	Dump truck	1	79	C.02 .30	40
	Hand-held pneumatic breaker	1	83	C.01 .6	20
	Impact piling rig	1	88	C.03 .3	20
	Tracked crane	1	70	C.03 .29	50
	Concrete pump	1	75	C.03 .26	40

Table 2- Construction Noise Assessment Criteria

Receptor	Representative Ambient Noise Level, (dB L_{Aeq})	BS5228-1 ABC Category	ABC Assessment Criterion (dB $L_{Aeq,T}$)
Weekday			
NSR 1 Great Northern Tower	63	B	70
NSR 2 Manchester Central	63	B	70
NSR 3 Viadux, Residential	63	B	70
NSR 4 Beetham Tower	63	B	70
NSR 5 Area to west of Deansgate	64	B	70
Saturday			
NSR 1 Great Northern Tower	61	C	65
NSR 2 Manchester Central	61	C	65
NSR 3 Viadux, Residential	61	C	65
NSR 4 Beetham Tower	61	C	65
NSR 5 Area to west of Deansgate	64	C	65

1.8. For each adopted receptor location, construction noise level calculations have been undertaken for works within the closest proposed phase of development.

1.9. 'Worst' and 'average' case calculations have been undertaken for each receptor. The worst case assumes all plant items for each construction working scenario are located at the closest point of the closest phase of development. The average case considers that all plant are located at the approximate centre of that phase of development.

1.10.

1.11. Table 3 sets out the range of construction noise levels calculated for each adopted receptor location. The range extends from the average case to the worst-case scenarios as described above.

Table 3 - Predicted 'Average' and 'Worst' Case Construction Noise Levels – Façade $L_{Aeq,T}$ (dB)

Receptor	Site Preparation		Substructure works	
	Worst case	Average Case	Worst case	Average Case
NSR 1 Great Northern Tower	85	72	80	68
NSR 2 Manchester Central	81	71	76	67
NSR 3 Viadux, Residential	79	70	74	66
NSR 4 Beetham Tower	85	72	80	68
NSR 5 Area to w of Deansgate	63	58	58	53

By comparison of Table 2 and

Table 3, the degree by which the construction noise criteria would be complied with / exceeded can be determined, as detailed in Table 4.

Table 4 - Construction Noise ABC Criterion Exceedance, dB

Receptor	Site Preparation		Substructure works	
	Worst case	Average Case	Worst case	Average Case
Weekday				
NSR 1 Great Northern Tower	15	2	10	-2
NSR 2 Manchester Central	11	1	6	-3
NSR 3 Viadux, Residential	9	0	4	-4
NSR 4 Beetham Tower	15	2	10	-2
NSR 5 Area to w of Deansgate	-7	-12	-12	-17
Saturday				
NSR 1 Great Northern Tower	20	7	15	3
NSR 2 Manchester Central	16	6	11	2
NSR 3 Viadux, Residential	14	5	9	1
NSR 4 Beetham Tower	20	7	15	3
NSR 5 Area to w of Deansgate	-2	-7	-7	-12

1.12. Table 5 presents a summary of the predicted unmitigated construction noise impacts at each of the previously identified noise-sensitive receptors.

Table 5- Predicted Construction Noise Impacts

Receptor	Site Preparation		Substructure works	
	Worst case	Average Case	Worst case	Average Case
Weekday				
NSR 1 Great Northern Tower	Major	Minor	Major	Negligible
NSR 2 Manchester Central	Major	Minor	Moderate	Negligible
NSR 3 Viadux, Residential	Moderate	Negligible	Minor	Negligible
NSR 4 Beetham Tower	Major	Minor	Major	Negligible
NSR 5 Area to west of Deansgate	Negligible	Negligible	Negligible	Negligible
Saturday				
NSR 1 Great Northern Tower	Major	Moderate	Major	Minor
NSR 2 Manchester Central	Major	Moderate	Major	Minor
NSR 3 Viadux, Residential	Major	Moderate	Moderate	Minor
NSR 4 Beetham Tower	Major	Minor	Major	Minor
NSR 5 Area to west of Deansgate	Negligible	Negligible	Negligible	Negligible