APPENDIX 14.4: CONSTRUCTION NOISE ASSESSMENT

CONSTRUCTION NOISE ASSESSMENT

1.1.1 A draft construction schedule with planned activities and proposed equipment has been provided by the Principal Contractor. This information is presented in **Table 0.-0-1: Assumed Construction Activity Sequence.**

Table 0.-0-1: Assumed Construction Activity Sequence

Construction Activity Phase	Estimated Programme Duration	Typical Plant
Phase 1 - Foresty	October 2025 – December 2025	3x Forwarder
		3x Harvester
		3x Woodchipper
		3x Tracked Excavator
		3x Chainsaw 70 cc greater
		3x Chainsaw less than 70
		3x Forestry mulcher
Phase 2 - Site Access & Clearance Form access roads, Initial establishment CDM compound, Install initial site works drainage, Clear site (including soils & stone storage areas)	April 2026 - July 2026	6x Artic. Dump Truck (ADT) (40T)
		3x 30T tracked excavator
		3x 20T GPS dozers
		1x 22T tracked excavator
		2x 8T mini-digger (drainage, etc.)
		2x Forestry mulcher
		1x 9T dumper
		1x 18t Drum Roller
		1x Diesel generator (site cabins) (2T)
Phase 3 - Compound Construction Form main compound Form satellite compound Install wider site works drainage	May2026 - July 2026	2x 8T mini-digger (drainage, etc.)
		2x 22T excavators
		2x 18T Drum Roller
		2x 9T dumpers
		2x Diesel generator (site cabins) (2T)
		1x Telescopic Crane (size TBC) - site establishment / lift cabins - assume 50T
Phase 4 - Bulk Earthworks & Platform Formation Principal cut and fill earthworks Stone processing & grading Main platform formation & levelling	July 2026 - July 2027	Blast team w 20T/ 125mm diameter drill rig (possibly x2)
		3x 30T tracked excavator
		1x 40T tracked excavator
		Rock crusher/ screener (90T)
		Rock crusher/ screener (38T)
		2x Diesel surface water pump (4")
		4x Artic. Dump Truck (ADT) (40T)
		3x 20T GPS dozers
		2x 18T Drum Roller
Phase 5 - Platform Civil Works AIS Foundations Drainage Services Internal Substation	May 2027 - July 2028	Concrete mixer truck (26T) discharging & concrete pump pumping (22m boom)
		2x 22T excavators
		2x 9T dumpers
		2x 8T mini-digger (drainage, cable trenches, etc.)
		1x 18T Asphalt paver
		2x Telehandler (4T)

Construction Activity Phase	Estimated Programme Duration	Typical Plant
Roads Security Fencing Permanent SuDS Basins		1x Compressor
		Skips - transport (wagon)
Phase 6 - Building Construction Phase 7 - Building Fit-out Phase 8 - Primary Installations Primary equipment, structures & transformers – delivery, installation & building fit-out	May 2027 - June 2028	1x 22T excavator
		1x Telescopic Crane - Building construction - assume 50T
		1x Lifting boom lorry (6T)
		4x Telehandler (4T)
		4x Lifting Platform (MWEP)
		Skips - transport (wagon)

1.1.2 Each activity is analysed to determine the percentage of the construction time each piece of equipment is being used and how many are in use. Using this information, a total equivalent noise level at 10 m for each activity is calculated. This information is presented in Table 0.-0-2: Construction Activity Noise Levels.

Table 0.-0-2: Construction Activity Noise Levels

Construction Activity Phase	Typical Plant	No.	% on-time	Overall Sound pressure Level at 10 m[dB(A)]	SPL at 10 m corrected	SWL	SWL corrected	total
Phase 1 - Forestry Clearence	3x Forwarder	3	50	56	58	84	86	97
	3x Harvester	3	50	64	66	92	94	
	3x Woodchipper	3	50	91	93	119	121	
	3x Tracked Excavator	3	80	77	81	105	109	
	3x Chainsaw 70 cc greater	3	50	83	85	111	113	
	3x Chainsaw less than 70	3	50	78	80	106	108	
	3x Forestry mulcher	3	50	92	94	120	122	
Phase 2 - Site Access & Clearance Form access roads, Initial establishment CDM compound, Install initial site works drainage, Clear site (including soils & stone storage areas)	6x Artic. Dump Truck (ADT) (40T)	6	80	89	96	117	124	98
	3x 30T tracked excavator	3	80	75	79	103	107	
	3x 20T GPS dozers	3	80	81	85	109	113	
	1x 22T tracked excavator	1	50	78	75	106	103	
	2x 8T mini-digger (drainage, etc.)	2	50	71	71	99	99	
	2x Forestry mulcher	2	50	92	92	120	120	
	1x 9T dumper	1	25	76	70	104	98	
	1x 18t Drum Roller	1	25	79	73	107	101	
	1x Diesel generator (site cabins) (2T)	1	80	59	58	87	86	
Phase 3 - Compound Construction	2x 8T mini-digger (drainage, etc.)	2	50	71	71	99	99	84
	2x 22T excavators	2	80	78	80	106	108	

Construction Activity Phase	Typical Plant	No.	% on-time	Overall Sound pressure Level at 10 m[dB(A)]	SPL at 10 m corrected	SWL	SWL corrected	total
Form main compound Form satellite compound Install wider site works drainage	2x 18T Drum Roller	2	50	79	79	107	107	
	2x 9T dumpers	2	80	76	78	104	106	
	2x Diesel generator (site cabins) (2T)	2	80	59	61	87	89	
	1x Telescopic Crane (size TBC) - site establishment / lift cabins - assume 50T	1	25	67	61	95	89	
Phase 4 - Bulk Earthworks & Platform Formation Principal cut and fill earthworks Stone processing & grading Main platform formation & levelling	Blast team w 20T/ 125mm diameter drill rig (possibly x2)	2	15	90	85	118	113	99
	3x 30T tracked excavator	3	80	75	79	103	107	
	1x 40T tracked excavator	1	50	79	76	107	104	
	Rock crusher/ screener (90T)	1	80	90	89	118	117	
	Rock crusher/ screener (38T)	1	80	96	95	124	123	
	2x Diesel surface water pump (4")	2	25	71	68	99	96	
	4x Artic. Dump Truck (ADT) (40T)	4	80	89	94	117	122	
	3x 20T GPS dozers	3	60	81	84	109	112	
	2x 18T Drum Roller	2	50	79	79	107	107	
Phase 5 - Platform Civil Works AIS Foundations	Concrete mixer truck (26T) discharging & concrete pump	1	50	75	72	103	100	83

Construction Activity Phase	Typical Plant	No.	% on-time	Overall Sound pressure Level at 10 m[dB(A)]	SPL at 10 m corrected	SWL	SWL corrected	total
Drainage Services Internal Substation Roads Security Fencing Permanent SuDS Basins	pumping (22m boom)							
	2x 22T excavators	2	50	78	78	106	106	
	2x 9T dumpers	2	50	76	76	104	104	
	2x 8T mini-digger (drainage, cable trenches, etc.)	2	50	71	71	99	99	
	1x 18T Asphalt paver	1	10	77	67	105	95	
	2x Telehandler (4T)	2	50	79	79	107	107	
	1x Compressor	1	10	65	55	93	83	
Phase 6 - Building Construction Phase 7 - Building Fit-out Phase 8 - Primary Installations Primary equipment, structures & transformers – delivery, installation & building fit-out	1x 22T excavator	1	20	78	71	106	99	85
	1x Telescopic Crane - Building construction - assume 50T	1	20	67	60	95	88	
	1x Lifting boom lorry (6T)	1	40	77	73	105	101	
	4x Telehandler (4T)	4	80	79	84	107	112	
	4x Lifting Platform (MWEP)	4	80	67	72	95	100	

1.1.1 Vehicle movements along access tracks have also been assessed. The proposed construction route reported in Chapter 13: Traffic and Transport have been used as the basis for the assessment. Access tracks have been assessed as haul routes in accordance with BS5228 and noise levels incorporated into overall construction noise assessment, using a peak number of HGV movements of 6 per hour. Named routes have been assessed separately using CRTN calculations.

$$L_{Aeq} = L_{WA} - 33 + 10\log_{10}Q - 10\log_{10}V - 10\log_{10}d + A - \text{air absorption} - \text{ground absorption}$$

Where:

- LWA = Sound power level of plant item, taken as a single engine vehicle of sound power 110 dB(A)
- Q = Number of plant item journeys per hour
- d = Distance to centre of haul road route segment
- A = 10log10(α/180)
- α = Angle of view of the haul road
- V = Speed of vehicle, taken as 32 km per hour
- Air absorption is taken as 0.0035 dBm-1 and attenuation due to ground absorption is assumed negligible.

1.1.3 The combined calculated construction and traffic noise for main NSRs are presented below in **Table 0.-0-5: BS 5228-1 Assessment Calculated Construction Noise – Limited Activities**.

Table 0.-0-3: BS 5228-1 Assessment Calculated Construction Noise – All Activities (Main NSRs)

NSR	Distance to RLB (m)	Phase 1				Phase 2				Phase 3				Phase 4				Phase 5				Phase 6			
		Calculated Construction Lp at Receptor (dB(A))	Calculated Haul Route Lp at Receptor (dB(A))	Total Construction Noise (dBA)	Excess Over 55 dB Limit	Calculated Construction Lp at Receptor (dB(A))	Calculated Haul Route Lp at Receptor (dB(A))	Total Construction Noise (dBA)	Excess Over 55 dB Limit	Calculated Construction Lp at Receptor (dB(A))	Calculated Haul Route Lp at Receptor (dB(A))	Total Construction Noise (dBA)	Excess Over 55 dB Limit	Calculated Construction Lp at Receptor (dB(A))	Calculated Haul Route Lp at Receptor (dB(A))	Total Construction Noise (dBA)	Excess Over 55 dB Limit	Calculated Construction Lp at Receptor (dB(A))	Calculated Haul Route Lp at Receptor (dB(A))	Total Construction Noise (dBA)	Excess Over 55 dB Limit	Calculated Construction Lp at Receptor (dB(A))	Calculated Haul Route Lp at Receptor (dB(A))	Total Construction Noise (dBA)	Excess Over 55 dB Limit
1.1	409	62	37	62	7	62	37	62	7	49	37	49	-6	63	37	63	8	48	37	48	-7	50	37	50	-5
1.2	1030	53	40	53	-2	53	40	54	-1	40	40	43	-12	54	40	54	-1	39	40	43	-12	41	40	43	-12
1.3	632	57	35	57	2	58	35	58	3	45	35	45	-10	59	35	59	4	44	35	44	-11	45	35	46	-9
2.1	894	54	48	55	0	55	48	56	1	41	48	49	-6	56	48	56	1	40	48	49	-6	42	48	49	-6
2.2	770	55	35	55	0	56	35	56	1	43	35	43	-12	57	35	57	2	42	35	43	-12	43	35	44	-11
2.3	745	56	35	56	1	57	35	57	2	43	35	44	-11	57	35	58	3	42	35	43	-12	44	35	44	-11
2.4	672	57	37	57	2	58	37	58	3	44	37	45	-10	58	37	59	4	43	37	44	-11	45	37	45	-10
2.5	1246	51	55	56	1	52	55	57	2	38	55	55	0	52	55	57	2	37	55	55	0	39	55	55	0

1.1.3 The calculated total values do not exceed the 65 dB daytime limits. However, NSRs are shown to exceed the 55 dB evening and weekend limit. If the following plant items are limited to construction times during daytime hours (Daytime is defined to be 07:00 – 19:00 on weekdays and 07:00 – 13:00 on Saturdays) it can be demonstrated that this limit is met.

Table 0.04: Construction Mitigation Requirements

Construction Activity Phase	Typical Plant
Phase 1 – Forestry Clearance	3x Woodchipper
	3xForestry mulcher
Phase 2 - Site Access & Clearance	6x Artic. Dump Truck (ADT) (40T)
Form access roads, Initial establishment CDM compound, Install initial site works drainage, Clear site (including soils & stone storage areas)	2x Forestry mulcher
Phase 4 - Bulk Earthworks & Platform Formation	Blast team w 20T/ 125mm diameter drill rig (possibly x2)
Principal cut and fill earthworks	Rock crusher/ screener (90T)
Stone blasting, processing & grading	Rock crusher/ screener (38T)
Main platform formation & levelling	4x Artic. Dump Truck (ADT) (40T)

1.1.4 The results with these items removed from the schedule show compliance with the 55 dB limit. This is to demonstrate possible compliance using a construction noise management plan. The results are presented in Table 0.-0-5: BS 5228-1 Assessment Calculated Construction Noise – Limited Activities.

Table 0.-0-5: BS 5228-1 Assessment Calculated Construction Noise – Limited Activities

NSR	Distance to RLB (m)	Phase 1				Phase 2				Phase 3				Phase 4				Phase 5				Phase 6			
		Calculated Construction Lp at Receptor (dB(A))	Calculated Haul Route Lp at Receptor (dB(A))	Total Construction Noise (dBA)	Excess Over 55 dB Limit	Calculated Construction Lp at Receptor (dB(A))	Calculated Haul Route Lp at Receptor (dB(A))	Total Construction Noise (dBA)	Excess Over 55 dB Limit	Calculated Construction Lp at Receptor (dB(A))	Calculated Haul Route Lp at Receptor (dB(A))	Total Construction Noise (dBA)	Excess Over 55 dB Limit	Calculated Construction Lp at Receptor (dB(A))	Calculated Haul Route Lp at Receptor (dB(A))	Total Construction Noise (dBA)	Excess Over 55 dB Limit	Calculated Construction Lp at Receptor (dB(A))	Calculated Haul Route Lp at Receptor (dB(A))	Total Construction Noise (dBA)	Excess Over 55 dB Limit	Calculated Construction Lp at Receptor (dB(A))	Calculated Haul Route Lp at Receptor (dB(A))	Total Construction Noise (dBA)	Excess Over 55 dB Limit
1.1	409	52	37	52	-3	51	37	51	-4	49	37	49	-6	51	37	51	-4	48	37	48	-7	50	37	50	-5
1.2	1030	43	40	45	-10	42	40	44	-11	40	40	43	-12	42	40	44	-11	39	40	43	-12	41	40	43	-12
1.3	632	48	35	48	-7	47	35	47	-8	45	35	45	-10	47	35	47	-8	44	35	44	-11	45	35	46	-9
2.1	894	44	48	50	-5	44	48	50	-5	41	48	49	-6	43	48	50	-5	40	48	49	-6	42	48	49	-6
2.2	770	46	35	46	-9	45	35	45	-10	43	35	43	-12	45	35	45	-10	42	35	43	-12	43	35	44	-11
2.3	745	46	35	46	-9	45	35	46	-9	43	35	44	-11	45	35	46	-9	42	35	43	-12	44	35	44	-11
2.4	672	47	37	47	-8	46	37	47	-8	44	37	45	-10	46	37	47	-8	43	37	44	-11	45	37	45	-10
2.5	1246	41	55	55	0	40	55	55	0	38	55	55	0	40	55	55	0	37	55	55	0	39	55	55	0