Appendix 12.3

Construction Noise Prediction Methodology & Data

Construction Plant Noise

Construction noise has been predicted at the relevant noise sensitive receptors using the calculation methodology described in BS 5228-1:2009+A1:2014 within the noise calculation software package IMMI.

The predictions take account of the noise level for each item of construction plant, the quantity of plant, and the usage per day (% on-time), as well the distance between the construction activities and the receptors, the ground type, the intervening topography and any other obstacles. As stated in Chapter 12 of the ES, noise levels have been predicted where each phase is in proximity to each noise sensitive receptor to provide a reasonable worst-case.

The construction plant used for each works face is listed in the following tables.

Table 1: Site Preparation, Access Road Construction and Enabling Works

Plant Item	Quantity	BS 5228-1 Ref.	$L_{Aeq,T}$ at 10 m (dB)	On-time (%)
Tracked Excavator, 226 kW - 40t	3	C2.14	79	90
Tracked Excavator, 102 kW - 22t	3	C2.3	78	75
Mini tracked excavator, - 5t	1	C4.67	74	25
Dump truck (tipping fill), 306 kW - 29t	13	C2.30	79	90
Vibratory roller, - 4t	7	C5.26	77	90
Dozer, 138 kW - 21t	7	C8.7	75	75
Tractor (towing equipment)*, 100 kW - -	4	C4.74	80	25
Road sweeper, 70 kW	1	C4.90	76	50
Tracked excavator, 128 kW - 28t	4	C6.8	80	80
Tracked Excavator, 102 kW - 22t	2	C2.3	78	75
Mini tracked excavator, - 5t	2	C4.67	74	50
Mini tracked excavator, 17 kW - 2.8t	1	C3.20	68	59
Articulated dump truck*, 198 kW - 30t	2	C8.16	81	50
Dumper*, 56 kW - 5t	2	C4.7	78	75
Dumper*, 32 kW - 3t	3	C4.9	77	50
Vibratory roller, - 4t	1	C5.26	77	25
Vibratory roller, 20 kW - 3t	2	C5.27	67	35
Dozer, 138 kW - 21t	1	C8.7	75	25
Tractor (towing equipment)*, 100 kW - -	1	C4.74	80	25
Vibratory compacter (asphalt), 3 kW - 60kg	2	C5.29	82	25
Asphalt paver (+tipper lorry), 78 kW - 18t	1	C5.33	75	25
Asphalt paver (+tipper lorry), 94 kW - 18t	1	C5.31	77	25
Road sweeper, 70 kW	1	C4.90	76	50

Table 2: Excavation and Sub-Structure Works

Plant Item	Quantity	BS 5228-1 Ref.	$L_{Aeq,T}$ at 10 m (dB)	On-time (%)
Crawler mounted CFA piling rig, 126 kW - 33t	1	C3.22	80	90
Concrete pump, 59 kW - 28t / 180mm diameter / 59 bar	1	C3.25	78	90
Tracked Excavator, 226 kW - 40t	3	C2.14	79	90
Tracked Excavator, 102 kW - 22t	3	C2.3	78	75
Mini tracked excavator, - 5t	1	C4.67	74	25
Dump truck (tipping fill), 306 kW - 29t	13	C2.30	79	90
Vibratory roller, - 4t	7	C5.26	77	90
Dozer, 138 kW - 21t	7	C8.7	75	75
Tractor (towing equipment)*, 100 kW - -	4	C4.74	80	25
Road sweeper, 70 kW	1	C4.90	76	50
Wheeled excavator, 90 kW - 18t	1	C4.10	66	50
Concrete mixer truck (discharging) & concrete pump (pumping)	1	C4.28	75	30
Compressor for held-held pneumatic breaker, - 1t	1	C5.5	66	60
Poker vibrator, 2.2 kW	2	C4.34	69	30
Dumper, 75 kW	1	C4.4	76	40
Vibratory roller, 98 kW - 8.9t	1	C5.20	75	30

Table 3: Drainage Works

Plant Item	Quantity	BS 5228-1 Ref.	$L_{Aeq,T}$ at 10 m (dB)	On-time (%)
Tracked Excavator, 226 kW - 40t	3	C2.14	79	90
Tracked Excavator, 102 kW - 22t	3	C2.3	78	75
Mini tracked excavator, - 5t	1	C4.67	74	25
Dump truck (tipping fill), 306 kW - 29t	13	C2.30	79	90
Vibratory roller, - 4t	7	C5.26	77	90
Dozer, 138 kW - 21t	7	C8.7	75	75
Tractor (towing equipment)*, 100 kW - -	4	C4.74	80	25
Road sweeper, 70 kW	1	C4.90	76	50

Table 4: Construction of Superstructure

Plant Item	Quantity	BS 5228-1 Ref.	$L_{Aeq,T}$ at 10 m (dB)	On-time (%)
Lorry (distributing material)*	2	C2.34	80	10
Dumper, 75 kW	1	C4.4	76	40
Telescopic handler, 75 kW - 3.7t	1	C4.55	70	60
Concrete pump, 59 kW - 28t / 180mm diameter /59 bar	1	C3.25	78	10
Tracked mobile crane, 184 kW	2	C3.28	67	25
Wheeled loader*, 75 kW - 37t	1	C4.13	71	40
Lifting platform, 35 kW	3	C4.57	67	50

Table 5: Landscaping

Plant Item	Quantity	BS 5228-1 Ref.	$L_{Aeq,T}$ at 10 m (dB)	On-time (%)
Mini tracked excavator, - 5t	2	C4.67	74	50
Dumper*, 56 kW - 5t	2	C4.7	78	50
Dumper*, 32 kW - 3t	2	C4.9	77	50
Tractor (towing equipment)*, 100 kW - -	1	C4.74	80	50
Road sweeper, 70 kW	1	C4.90	76	15

Table 6: Offsite Roads

Plant Item	Quantity	BS 5228-1 Ref.	$L_{Aeq,T}$ at 10 m (dB)	On-time (%)
Tracked excavator, 128 kW - 28t	1	C6.8	80	80
Tracked Excavator, 102 kW - 22t	2	C2.3	78	75
Mini tracked excavator, - 5t	1	C4.67	74	50
Mini tracked excavator, 17 kW - 2.8t	1	C3.20	68	50
Articulated dump truck*, 198 kW - 30t	2	C8.16	81	50
Dumper*, 56 kW - 5t	2	C4.7	78	75
Dumper*, 32 kW - 3t	2	C4.9	77	50
Vibratory roller, - 4t	1	C5.26	77	25
Vibratory roller, 20 kW - 3t	1	C5.27	67	40
Dozer, 138 kW - 21t	1	C8.7	75	25
Tractor (towing equipment)*, 100 kW - -	1	C4.74	80	25
Vibratory compacter (asphalt), 3 kW - 60kg	2	C5.29	82	25
Asphalt paver (+tipper lorry), 78 kW - 18t	1	C5.33	75	25
Asphalt paver (+tipper lorry), 94 kW - 18t	1	C5.31	77	25
Road sweeper, 70 kW	1	C4.90	76	50
Mini planer, 32 kW - 3t	1	C5.9	68	25

Construction Traffic

Construction traffic noise has been predicted at the relevant noise sensitive receptors using the calculation methodology from CRTN within the noise calculation software package IMMI for two traffic scenarios as detailed in Chapter 12 of the ES, based on the following flow data provided by the Applicant's transport consultant.

As well as the flow data, the predictions take account of the average speed, the distance between the roads and the receptors, the ground type, the intervening topography and any other obstacles.

The values represent the annual average weekday traffic (AAWT) value for the 18 hour period of 06:00 to 00:00, as required by CRTN.

Table 7: Data used for predictions of construction traffic noise

Road	Section	Construction Peak Year (2025) - Without Proposed Development			Construction Peak Year (2025) - With Proposed Development		
		Car/LGV	HGV	Total Vehicles	Car/LGV	HGV	Total Vehicles
A635	Between proposed site access roundabout and Billingley Green Lane	23,439	2,496	25,934	23,985	2,695	26,680
A635	West of Billingley Green Lane	22,648	2,490	25,137	23,169	2,689	25,859
A635	East of Cathill Roundabout	22,690	2,445	25,135	23,211	2,645	25,856
A6195	South of Cathill Roundabout	26,172	2,140	28,311	26,459	2,270	28,729
A635	West of Cathill Roundabout	14,458	1,111	15,569	14,595	1,152	15,747
A6195	North of Cathill Roundabout	18,741	1,517	20,258	18,838	1,546	20,385
A635	Between proposed site access roundabout and Hollygrove Roundabout	23,402	2,484	25,886	23,914	2,584	26,498
A635	East of Hollygrove Roundabout	13,763	2,519	16,282	13,967	2,619	16,586
Barnsley Road	East of Hollygrove Roundabout	8,412	409	8,821	8,494	409	8,903
Highgate Lane	North of Commercial Road	8,709	293	9,002	8,709	293	9,002
Highgate Lane	South of Commercial Road	11,078	385	11,463	11,305	385	11,690
A635	West of Fields End Roundabout	13,699	2,469	16,168	13,903	2,569	16,472
A635	East of Fields End Roundabout	13,342	2,623	15,965	13,465	2,723	16,188
A635	West of Hickleton Road / Red Hill Lane	18,999	2,943	21,942	19,121	3,043	22,164
A635	East of Hickleton Road / Red Hill Lane	15,613	2,789	18,402	15,727	2,889	18,616
A635	West of Blacksmiths Lane	15,654	2,839	18,493	15,768	2,940	18,707
A635	East of Blacksmiths Lane	19,274	3,047	22,321	19,388	3,147	22,535
A635	West of Church Lane	19,331	3,011	22,342	19,445	3,111	22,556
A635	East of Church Lane	18,842	2,996	21,838	18,955	3,097	22,052