

Appendix 14.B Construction Plant

Construction Plant for Tunnel Head Compounds and Tunnelling

Shaded rows indicate plant identified for enclosure in structure as part of mitigation strategy to meet night-time noise limits

Stage	Option	Plant	Type/Details	Data Source	Number	Sound Level / dBA	Usage				Location		
							Day		Night		Level	Garth	Cilfor
							Yes/No	Utilisation %ON TIME	Yes/No	Utilisation %ON TIME			
Enabling Works/ site establishment, compound construction, water cut of grouting, fencing etc		Generator	150- 250 kVA	https://www.cwplant.co.uk/shop/250kva-generator-bc250/	1	69	yes	100	No		Surface	X	X
		Small Generator	50kVA	https://www.cwplant.co.uk/shop/40kva-generator/	1	62	No	100	Yes	100	Surface	X	X
		Excavators	2 * Liebherr 944 or Komatsu PC 360 LC	Liebherr website	2	77	yes	80	No	-	Surface	X	X
		Bulldozer	2* Cat D6T Or Komatsu D65 PX-18	Komatsu website	2	80	yes	80	No	-	Surface	X	X
		Tracked - Loading shovel	Cat 953k or Liebherr LR 636	Liebherr website	2	82	yes	40	No	-	Surface	X	X
		bulk material trucks	4 axle wagon	BS 5228-1:2009+A1:2014 Table C2 ref No 37	4	80	yes	25	No	-	Surface	X	X
		Drilling Rig (shaft grouting)		BS 5228-1:2009+A1:2014 Table C3 ref No 3	1	88	yes	25	No	-	Surface	X	X
		grout mixer		BS 5228-1:2009+A1:2014 Table C4 ref No 23	1	61	yes	25	No	-	Surface	X	X
		Grout pump		BS 5228-1:2009+A1:2014 Table C3 ref No 26	1	75	yes	25	No	-	Surface	X	X
		Compressor	small compressor	BS 5228-1:2009+A1:2014 Table C3 ref No 19	1	74	yes	25	No	-	Surface	X	X
		Dumper	9t dumper	BS 5228-1:2009+A1:2014 Table C4 ref No 5	2	76	yes	40	No	-	Surface	X	X
		delivery lorries	44t lorry	BS 5228-1:2009+A1:2014 Table C11 ref No 4	2	83	yes	50	No	-	Surface	X	X
		Road sweeper	standard unit	BS 5228-1:2009+A1:2014 Table C4 ref No 90	1	76	yes	50	No	-	surface	X	X
		Roller	18t roller	BS 5228-1:2009+A1:2014 Table C2 ref No 37	1	79	yes	25	No	-	surface	X	X
		Concrete mixing truck	26t/7m3 wagon	BS 5228-1:2009+A1:2014 Table C4 ref No 27	1	79	yes	25	No	-	surface	X	X
		Concrete pump	17t concrete pump & boom	BS 5228-1:2009+A1:2014 Table C4 ref No 30	1	79	yes	25	No	-	surface	X	X
Loading Material into lorry		BS 5228-1:2009+A1:2014 Table C10 ref No 10	1	85	yes	25	No	-	surface	X	X		
Shaft sinking / Secant piling & wall construction, rings beams, soft ground excavation, grouting as required, hard rock excavation with SCL lining being applied.	Secant piling	Secant Piling Rig	Average taken from numerous examples	BS 5228-1:2009+A1:2014 Table C12 ref No 40-49	1	77.5	yes	25	No	-	Surface	X	X
		Concrete mixing truck	26t/7m3 wagon	BS 5228-1:2009+A1:2014 Table C4 ref No 27	1	79	yes	25	No	-	Surface	X	X
		Concrete pump	17t concrete pump & boom	BS 5228-1:2009+A1:2014 Table C4 ref No 30	1	79	yes	25	No	-	Surface	X	X
		Excavator in shaft		Liebherr website	1	105	yes	25	No	-	Underground	X	X
		muck skips (emptying)		BS 5228-1:2009+A1:2014 Table C10 ref No 10	2	85	yes	25	No	-	Surface	X	X
		Mechanical rock excavation	excavator mounted rock breaker	BS 5228-1:2009+A1:2014 Table C5 ref No 1	1	88	yes	50	No	-	Underground	X	X
		Mobile Crane	2* 50 tonne mobile cranes	BS 5228-1:2009+A1:2014 Table C4 ref No 46	1	67	yes	75	No	-	Surface	X	X

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							Day		Night		Level	Garth	Cilfor	
							Yes/No	Utilisation %ON TIME	Yes/No	Utilisation %ON TIME				
		Compressor	small compressor	BS 5228-1:2009+A1:2014 Table C3 ref No 19	1	74	yes	80	No	-	Surface	X	X	
		Loading shovel	Cat 953k or Liebherr LR 636	BS 5228-1:2009+A1:2014 Table C10 ref No 10	1	85	yes	25	No	-	Surface	X	X	
		SCL silo/batching plant		BS 5228-1:2009+A1:2014 Table C4 ref No 23	1	61	yes	25	No	-	Surface	X	X	
		SCL Pump		BS 5228-1:2009+A1:2014 Table C4 ref No 30	1	79	yes	25	No	-	Surface	X	X	
		SCL Pump		BS 5228-1:2009+A1:2014 Table C4 ref No 30	1	79	yes	25	No	-	Underground	X	X	
		SCL delivery truck	44t lorry	BS 5228-1:2009+A1:2014 Table C11 ref No 4	1	83	yes	25	No	-	Surface	X	X	
		Ventilation plant					yes	100	No	-	Surface	X	X	
		Drainage pumps		BS 5228-1:2009+A1:2014 Table C4 ref No 88	2	68	yes	100	No	-	Underground	X	X	
		Water treatment works					yes	100	No	-	Surface	X	X	
		Water discharge pumps		BS 5228-1:2009+A1:2014 Table C4 ref No 88	2	68	yes	100	No	-	Surface	X	X	
		Bulk material Trucks	4 axle wagon	BS 5228-1:2009+A1:2014 Table C2 ref No 37	2	80	yes	25	No	-	Surface	X	X	
		Generator	150- 250 kVA	https://www.cwplant.co.uk/shop/250kva-generator-bc250/	1	69	yes	10	No	-	Surface	X	X	
		hand tools		BS 5228-1:2009+A1:2014 Table C2 ref No 67 - 73)	3	84.8	yes	10	No	-	both	X	X	
Tunnelling / STM, Excavation, advance, build cycles. Train movements, segments and materials in, spoil out.	Slurry Machine	Ventilation plant					Yes	100	Yes	100	Underground	X		
		Mobile Crane	2* 50 tonne mobile cranes	BS 5228-1:2009+A1:2014 Table C4 ref No 46	1	67	Yes	75	Yes	50	Surface	X		
		Segment delivery truck	44t lorry	BS 5228-1:2009+A1:2014 Table C11 ref No 4	2	83	Yes	25	No	-	Surface	X		
		Tunnel construction Train		assumed	1	80	Yes	100	Yes	100	Underground	X		
		Water Treatment works						Yes	100	Yes	100	Underground	X	
		Water Discharge pumps		BS 5228-1:2009+A1:2014 Table C7 ref No 41	2	78	Yes	100	Yes	100	Underground	X		
		Drainage pumps		BS 5228-1:2009+A1:2014 Table C4 ref No 88		68	Yes	100	Yes	100	Underground	X		
		TBM Operation						Yes	100	Yes	100	Underground	X	
		Grout silo mixing		BS 5228-1:2009+A1:2014 Table C4 ref No 23	1	61	yes	20	No	-	surface	X		
		Grout pump		BS 5228-1:2009+A1:2014 Table C3 ref No 26	2	75	yes	20	No	-	Underground	X		
		Slurry pumps		BS 5228-1:2009+A1:2014 Table C4 ref No 88	1	68	Yes	100	Yes	100	Both	X		
		Slurry treatment plant			1	78.5	Yes	100	Yes	100	Surface	X		
		Compressor	small compressor	BS 5228-1:2009+A1:2014 Table C3 ref No 19	1	74	yes	25	No	-	Surface	X	X	
		Generator	150- 250 kVA	https://www.cwplant.co.uk/shop/250kva-generator-bc250/	1	69	Yes	10	yes	10	Surface	X		

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							Yes/No	Utilisation %ON TIME	Yes/No	Utilisation %ON TIME			
		hand tools		BS 5228-1:2009+A1:2014 Table C2 ref No 67 - 73)	3	84.8	Yes	10	Yes	10	Both	X	
Secondary Lining / construction of a cast insitu concrete lining.		Ventilation plant					Yes	100	No	-	Underground	X	X
		Mobile Crane	2* 50 tonne mobile cranes	BS 5228-1:2009+A1:2014 Table C4 ref No 46	1	67	Yes	100	No	-	Surface	X	X
		Concrete delivery trucks	26t/7m3 wagon	BS 5228-1:2009+A1:2014 Table C4 ref No 27	2	79	Yes	25	No	-	Surface	X	X
		concrete pumps	17t concrete pump & boom	BS 5228-1:2009+A1:2014 Table C4 ref No 30	2	79	Yes	25	No	-	Surface	X	X
		Hand tools		BS 5228-1:2009+A1:2014 Table C2 ref No 67 - 73)	3	84.8	Yes	10	No	-	Both	X	X
		Compressor	small compressor	BS 5228-1:2009+A1:2014 Table C3 ref No 19	1	74	yes	25	No	-	Surface	X	X
		delivery lorries	44t lorry	BS 5228-1:2009+A1:2014 Table C11 ref No 4	2	83	Yes	25	No	-	Surface	X	X
		Generator	150- 250 kVA	https://www.cwplant.co.uk/shop/250kva-generator-bc250/	1	69	Yes	10	Yes	10	Both	X	X
Removal of TBM		Large Mobile Crane	400t wheeled crane	BS 5228-1:2009+A1:2014 Table C4 ref No 38	1	78	Yes	100	No	-	Surface		X
		HGVs to remove TBM	44t lorry	BS 5228-1:2009+A1:2014 Table C11 ref No 4	2	83	Yes	100	No	-	Surface		X
		Hand tools		BS 5228-1:2009+A1:2014 Table C2 ref No 67 - 73)	3	84.8	Yes	10	No	-	Both		X

Construction Plant for Transient and Short-Duration Works and Associated Plant Noise Levels

Activity	Plant	Number	BS5228 Reference	Percentage On Time	Sound Pressure at 10m (dB(A))
Construction Access					
Site Preparation	Concrete Lorry	1	C4.18	10	75.0
	Petrol Hand Held Saw	1	C4.70	10	70.0
	Tracked Excavator	1	C2.3	60	78.0
Road Construction	Wheeled Backhoe Loader	1	C2.8	70	78.0
	Dumper	1	C4.3	60	76.0
Surfacing	Road Roller	1	C5.19	60	80.0
Dust Suppression	Road Sweeper	1	C4.90	5	76.0
Water Bowser	Water	1	C6.37	10	81.0
Overhead Line Decommissioning					
Pylon Dismantling	Tracked Excavator	1	C2.14	70	79.0
	Tele Handler	2	C4.55	60	70.0
Breaking up concrete	Excavator Mounted Pulverizer	1	C1.3	70	80.0
Rubble Dumping	Tracked Excavator	1	C1.10	20	85.0
Cutting Steel	Gas Cutter	1	C1.18	50	82.0
Sealing End Compounds					
Garth					
Ground Preparation	Excavator	1	C2.14	70	79.0
Structure	CFA Piling Rig	1	C3.21	60	79.0
	Concrete Pump	1	C3.25	50	77.0
Cable Jointing	Generator	1	C3.32	90	73.0
	Angle Grinder	1	C4.93	60	80.0
Cilfor					
Ground Preparation	Excavator	1	C2.14	70	79.0
Piled Foundations	CFA Piling	1	C3.21	60	79.0
	Concrete Pump	1	C3.25	50	77.0
Cable Jointing	Generator	1	C3.32	90	73.0
	Angle Grinder	1	C4.93	60	80.0
Undergrounding					
Trench					
Trenching	Tracked Excavator	1	C2.3	60	78.0
	Tracked mobile crane	1	C3.9	60	70.0
Cable Laying	Side Boom	2	C3.28	60	67.0
	Wheeled Backhoe Loader	1	C2.8	70	78.0
Backfill	Dumper	2	C4.3	60	76.0
	Front End Loader	1	C2.28	60	76.0
Compaction	Roller Compactor	1	C2.42	60	78.0
Temporary/ Terminal Pylon Construction					

Activity	Plant	Number	BS5228 Reference	Percentage On Time	Sound Pressure at 10m (dB(A))
Ground Preparation	Excavator	1	C2.14	70	79.0
Piled Foundations	CFA Piling Rig	1	C3.21	60	79.0
	Concrete Pump	1	C3.25	50	77.0
Pylon Assembly	Tele Handler	1	C4.55	60	70.0
Pylon Installation	Crane	1	C4.38	60	78.0
Pylon Tensioning	Winder	1	Suppliers data	75	77.0
	Rear Winder	1	Suppliers data	75	77.0
Installation of new Bridge and temporary bridge.					
Site Preparation	Concrete Lorry	2	C4.18	10	75.0
Bored Piling	Crane mounted Auger	1	C3.16	40	79.0
Bridge Assembly	Crane to assemble bridges	1	C3.28	30	67.0
	Tracked Excavator	1	C6.6	60	81.0
	Dumper	1	C4.3	15	76.0
	HGV's transporting Type 1	1	C6.26	15	79.0
Temporary Rail Bridge (4ZC035)					
Bridge Installation	Crane to assemble bridges	1	C3.28	60	67.0
	Lorry with lifting boom	1	C4.53	60	77.0
Tunnel Head House					
Piled Foundations	Steel Tube Piling Rig	1	C3.4	50	77.0
	Concrete Pump	1	C3.25	50	77.0
Structure	Crane	1	C4.38	50	78.0
	Concrete trucks and pump	1	C4.28	50	80.0
Fit Out	Tele Handler	1	C4.55	60	70.0
	Angle Grinder	1	C4.93	60	80.0